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ABSTRACT

This document reports on a doctoral-level practicum designed to train volunteers as docents to assist in the programs of the NOVA Children's Museum located on the Cedargrove School campus (Covina, California). Docents were found to be essential for more in-depth science learning to take place during hands-on museum experiences which promote the inquiry method of learning. The goals of the project were to: (1) increase the use of volunteers as docents by conducting training sessions in the science skills and concepts represented in the museum; (2) provide the opportunity for kindergarten through fifth grade students from the local school district to manipulate/use a multitude of science materials exhibited in the museum with a pullout program; and (3) increase the amount of knowledge gained in specific areas of scientific exploration by the students in the museum. Results indicated that all of the participants in the docent training sessions regarded the inservice training as valuable, informative, and beneficial in their work in the museum. In addition, 100% of the 290 students involved in the NOVA program attended the regularly scheduled visits/classes, and the students did increase their scientific knowledge. (Author/TW)

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Training and Utilizing Volunteers as Docents to Assist in the Nova Cedargrove Children's Museum

by

Donna J. Hughes

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NOVA UNIVERSITY

TRAINING AND UTILIZING VOLUNTEERS AS DOCENTS TO ASSIST IN THE NOVA CEDARGROVE CHILDREN'S MUSEUM

by

DONNA J. HUGHES

Cluster 12

Practicum Submitted to the Faculty of the
Early Childhood Education Program
in Candidacy for the Degree
Doctor of Education

NOVA UNIVERSITY

1986

PRACTICUM APPROVAL SHEET

This practicum took place as described.

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10-28-86 E Riley Holman

Date of Final Approval of Report

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Abstract

Training and Utilizing Volunteers as Docents to Assist in the NOVA Cedargrove Children's Museum

Hughes, Donna J. 1986: Practicum Report, Nova University Ed. D. Early Childhood Program

Descriptors: Science/Science in the Elementary School/Science Curriculum/ Museums/Children's Museums/Sensory Motor

The purpose of the practicum was to train volunteers as docents to assist in the NOVA Children's Museum. Docents were essential for more in-depth science learning to take place by the students using the "hands-on" museum experiences to promote the inquiry method of learning.

The writer's goals were: 1) to increase the use of volunteers as docents by conducting training sessions in the science skills and concepts represented in the museum; 2) to provide the opportunity for students to manipulated/use a multitude of science materials exhibited in the museum with a pullout program; and 3) to increase the amount of knowledge gained in specific areas of scientific exploration by students in the museum.

All of the participants in the docent training sessions regarded the inservices as valuable and informative and benefitted from them furthering work in the museum. Of the approximately 290 students involved in the inreach museum visits, there was 100% attendance by each student at the regularly scheduled visits/classes. Another 325 students were involved in the docents' outreach programs and 100 in field trips to the museum. The students did increase their scientific knowledge.

CHAPTER I

INTRODUCTION

Description of Community

The elementary school involved in this study was Cedargrove Elementary in the Charter Oak Unified School District. The Charter Oak Unified School District is composed of eight schools. There are five elementary schools, one intermediate school, one high school, and one continuation school.

Charter Oak is a pleasant, suburban community located in an unincorporated area of Los Angeles County. It is primarily a residential community with easy access to beaches, mountains, desert, and the Los Angeles metroplitan area. Geographically, the community served by Charter Oak Unified School District covers about six square miles. It is bounded on the southwest by the City of Covina, California and on the north and east by the cities of San Dimas and Glendora, California.

The area was formerly agricultural but residential building in the late 1950's and early 1960's has changed the character of the community. Whereas there were many citrus and avocado groves, there are now many subdivisions. Recently there have been several low-income housing facilities constructed within the six square miles.

Generally, students live within a two-mile radius of the school they attend. Most, however, live within a one-mile radius. Bus service is provided

for special education students who would normally attend another school in the district and for physically handicapped students.

A broad span of socioeconomic backgrounds, academic interests, and an ever-increasing number of ethnic backgrounds were represented in the composition of the student body. The population of the schools in the district remained predominantly white. According to the 1984-85 school ethnic survey of students, Charter Oak Unified School District did not have any schools segregated or close to becoming segregated using the criteria that if the ethnic minority composition of a school exceeded the districtwide distribution of that minority by 25%, it should be considered segregated.

The community of Charter Oak is considered a middle-class community with few people at either socioeconmic extreme. Therefore, the schools are quite homogeneous with the northern schools in the area having a slightly lower socioeconomic status but not significantly so. The major occupations of the residents at the northern schools are trades and skilled labor. A majority of the residents at the southern schools is engaged in professional and business pursuits. Very few students are eligible to receive federal aid.

Cedargrove Elementary School has been in existence since 1963. Originally it was designed to serve the needs of students in kindergarten through eighth grade. In September 1979, the district decided to place seventh and eighth grade students at the intermediate school. In September 1985, the district decided also to place sixth grade students at the intermediate school. Therefore, the school is a large facility with many rooms. This move provided the district with space for the gifted program, the county special education program, and the drug/substance program, Project Info.

The educational needs of the students at Cedargrove School were met by 18 full-time teachers, 2 special education teachers, 2 resource specialists, several part-time special service personnel, as well as many classified employees. Sixteen teachers were tenured. A high degree of curriculum autonomy was allowed by the district to the principal, and that same autonomy was passed on to the teaching staff.

The special education teachers offered individual learning programs for students identified as having special needs. The resource teachers included a reading resource teacher and a Chapter I resource coordinator. The reading resource teacher provided additional reading instruction based on teacher referral. She coordinated remediation and enrichment reading programs throughout kindergarten through third grades. The Chapter I resource coordinator supervised the Chapter I laboratory and provided supplemental reading and math instruction to students scoring below the 25th percentile on the California Achievement Tests in fourth through fifth grades.

The special service personnel consisted of specialists who served several schools in the district and provided services to Cedargrove students on a part-time basis. The psychologist worked one and one-half days per week and processed guidance level referrals. The special language specialist worked two days per week with selected students who had the need for language therapy. The music teacher provided instrumental instruction for interested fourth and fifth grade students two mornings a week. Students who were not yet proficient in English received assistance from the English as a Second Language specialist two mornings per week. Second through fifth grade students who qualified for the gifted program attended the extended learning

center one morning per week. A nurse was available to test students in the areas of vision and hearing. She also coordinated scoliosis screening.

Writer's Work Setting and Role

The writer is a California credentialed teacher employed by Charter Oak Unified School District as a kindergarten teacher at Cedargrove Elementary School. She has taught 21 years for Charter Oak Unified School District--all at Cedargrove School--all as a kindergarten teacher. One of those years she was assigned a kindergarten-first grade combination. The first grade students assigned to the writer were identified as those who would probably experience a delay in the reading process as indicated by low test scores and teacher observations with respect to social-emotional problems, developmental delays, and learning problems.

The writer also worked with the Cedargrove Child Study Team (CST) as a consultant for intervention strategies to assist children and teachers when students are experiencing learning problems. She also did classroom observations of the students referred to the CST and assisted with testing required for special placement of students. She received her Bachelor of Science in Education in 1958 from Illinois State Normal University, now Illinois State University. She holds a Master of Science Degree in Learning Handicapped from Mount St. Mary's College, Los Angeles, California.

The writer also functioned as an on-site art consultant. Additionally, she served as a multicultural coordinator and a member of the district curriculum committee and computer science committee. She developed and taught a specialized phonics program, assisting the reading resource specialist.

She also developed an extended day kindergarten program to enhance and expand curriculum development; it is now district-wide. She is the creator and director of NOVA: Cedargrove Children's Museum. The museum received an Honorable Mention from the Los Angeles County Office of Education's 1985 Exemplary Programs Awards under the category of Curriculum and Instruction. Each year the Los Angeles County Board of Education recognizes exemplary innovative programs developed by an individual or individuals which promote the nation's commitment to freedom by fostering an atmosphere of creativity and freedom that encourages students to grow within the framework of their own unique personalities.

For the past four years, she was a tutor for the Assistance League of San Gabriel Valley (a community service agency) at the Learning Center, Covina, California. She does private tutorial/consultant work as well.

Since the writer functions as the director of a museum in her work setting, an explanation of that museum is included in this practicum. NOVA: Cedargrove Children's Museum is located on the Cedargrove School campus in Covina, California. In terms of traditional definitions, it is not a "real" museum. It is, however, a "real" museum in that it is a collection of objects and exhibits housed in a building or room. What makes a children's museum unique is that the objects and collections exhibited are designed to be participatory. That is, children are encouraged to become involved, touch, and manipulate each of the objects collected in the exhibits and combine learning and fun through a "hands-on" discovery process.

With children's museums, the premise of the participatory aspect is that multisensory impressions will help to encourage the children's growth of thought and expression and affect intellectual development. Children's

knowledge will increase as well as their depth of understanding. Perceiving, remembering, believing, and reasoning are abilities important to scientific thinking; they are acquired by DOING. NOVA: Cedargrove Children's Museum's basic philosophy and purpose, therefore, is to provide the opportunity for children to touch, to play actively, and to experience science through the discovery method in a public school educational setting.

NOVA was made possible by a minigrant awarded for instructional leadership development by the Southern California Administrators Association's Region 15 Curriculum and Instructional Leaders Committee. The writer was a doctoral candidate at Nova University, Fort Lauderdale, Florida. She applied for a grant while studying grantsmanship in the curriculum and program development study area in Nova University's Early Childhood Education Doctoral Program; it was awarded to her (see Appendix A). The museum was officially opened to the students and community of Charter Oak Unified School District in October 1984.

Since that time, the museum was also the meeting place for several educational groups and committees. One such group to conduct its meeting in the museum was the Elementary/Intermediate Curriculum Council of Charter Oak Unified School District. Included in Appendix B is a copy of a memorandum written by one of the participants of the Curriculum Council and sent to the director.

In May 1985, NOVA museum received an Honorable Mention from the Los Angeles County Office of Education for 1985 Exemplary Programs under the category of Curriculum and Instruction. As stated, each year the Los Angeles County Board of Education recognizes exemplary innovative programs developed by an individual or individuals which promote the nation's

commitment to freedom by fostering an atmosphere of creativity and freedom that encourages students to grow within the framework of their own unique personalities (see Appendix C).

The museum grant application was written under the project title High Instructional Touch Techniques for Science (HITTS). HITTS was designed to enhance the science component in the public school educational program. The museum itself was proposed as a part of the grant. The writer's design was to replicate the prestigious Los Angeles Children's Museum. The exhibits and learning center areas were miniaturized, however, due to space limitations. It was replicated as proposed and NOVA was created.

Since NOVA's purpose is to provide a place where children learn by doing in an interactive, play-like atmosphere; experience science in everyday life experiences; and are encouraged to make choices, imagine, invent and create, pretend and work together, the writer has included a listing of the paticipatory exhibits. The exhibits were also intended to cover the major areas of the primary/elementary science curriculum since the museum is located in an educational setting. They are ever changing! The exhibits include:

Sticky Underwater City

In this lively "watery" exhibit, children move the underwater sea life with the help of velcro and a blue felt sea. They name, label, and classify sea life and shells as they move the underwater world.

Sense Center

This exhibit is designed to tune into each of the five senses. Some of the items are: the feely box and an elaborate telephone system to stimulate the auditory channel.

Kidwitness News

Members of the television generation can work behind the scenes as well as "star" by performing in a student scale model of a television studio. It contains a camera and video monitor. Dr. George's Weather Report is a favorite.

Space Capsule

The capsule comes complete with a space suit and "lift-off" capabilities. Tapes assist students for a trip through the galaxy and a visit to each of the planets. Also visible for viewing is Halley's comet.

Fossil Dig

Young archaeologists dig up the past and bring it into the present at a "dig" site. By actually digging, the students can construct a timeline that shows the evolution of the plants and animals--including dinosaurs.

From Ants To Plants

The children watch an ant community at work. This exhibit deals with living things and life processes, and the children learn how to identify and classify plants and animals for a study of their environment.

Fantastic Light

The children learn how to refract a light beam with a prism. They explore lenses and the changes they make in images. Many types of "scopes" are available for students.

Photography

The children utilize the sun's energy to make sunprints as well as to explore how a camera works.

Computers Everywhere

The children use a computer to discover more science in action on the screen. They see computers at work in toys, games, and more.

Mathematics at Work

Through the use of video games, students use mathematics and develop eye-hand coordination in exploring their everyday work.

Back-in-Time Capsule

Children can experience history as they dress up and "live life" before the age of technology. By hand, of course, the children weave and clean rugs, "prepare" food, and wash clothes on a washboard.

Delightful Dinosaurs

Children help dinosaurs come to life. There are dinosaurs' body parts to be put together as well as a giant puzzle to reconstruct the scene when they inhabited the earth. Puppets can be sewn in preparation for a play. Naming is all important!

Engineering

Tiny fingers that are just discovering the thrill of fitting things together or bigger builders enjoy the creative building experiences with Lego blocks. Children create a space station and more.

Wood Workshop

Children learn about safety while using tools to create magnificent wood structures, cars, trucks, animals--anything the mind envisions--out of wood pieces, wheels, glue and nails.

Shadow Box

Children learn about body awareness and creativity using the body and body parts to make shadows. Again, using light, they visualize their actions.

Flight Dynamics

The children can design, build, and apply the principles of flight by making models. There are even all kinds of paper airplanes, but will they really fly? The children explore the dynamics of flight in action--by trying.

Filmmaking

This exhibit allows junior filmmakers and directors to "produce" their own filmstrips. Viewers allow them to see their final product.

Zeotrope

This exhibit introduces the concepts of animation sequencing, visual story plotting, as well as combining cognitive learning with the affective art experience.

Health--How Do You Feel?

Role-playing takes place in a doctor's, dentist's, and veterinarian's office. Examining table, x-rays and x-ray machines, tools, gurney, wheelchair, crutches, patients, and more provide opportunities for awareness to replace the fear of the unknown in a positive atmosphere.

Careers

The children try on a uniform and dress up for a career, then actually drive off on a battery-powered NOVA fire truck or police vehicle. They learn traffic safety as well as how to protect the museum, control traffic, and assist patients in getting to the hospital or doctor's office. They also learn how to safeguard their homes with locks and keys.

Electricity

In this exhibit, the children explore all sources of energy. They can explore the working of a battery and build simple circuits.

Magnetism

The children learn all about the attraction of magnets by using a variety of games and opportunities to experiment with the magnetic force.

Sand and Sea

This exhibit gives children the opportunity to go on a treasure hunt in sand while they also conduct simple experiments with sand and water. For example, there are corks, sponges, water-lift tools, water wheels, bubbles, balloons and straws to use for experimentation.

Sand Pendulum

The miniature sand pendulum makes pictures that are ever changing from the motion of the pendulum. This is always an exhibit of fascination for the children.

Mirrors

See yourself as others, hopefully, don't see you! Here children can be tall, thin, short, plump, wide--or maybe even upside-down--they use their own descriptors. This exhibit is guaranteed to reactivate the quiz show "Twenty Questions" because of the need to know the how and why.

Printing Press

Children learn all aspects of the newspaper including reporting, writing a story, editing, and printing the paper in this exhibit. The graphic artist will relish the opportunity to "create" cards, magazines, and books.

Pan For Gold

Children learn the names and attributes of rocks and minerals while they pan for gold and recreate the Old West in the times of the Gold Rush. Will they be fooled with "fool's gold," or pyrite, or learn to recognize real gold? Children can try their hand and take a pan and pan for gold.

How Does It Work?

This exhibit is filled with nonworking small appliances. Children can take them apart as they try to discover how they work. Then, can they put them back together and get them to work once again? Try, try again!

Traveling Trunk Show

Children can open up the trunk and try on another country and culture. There are hats, vests, skirts, kilts, shoes, socks, boots, veils--need more? If so, then they can try musical instruments from other countries. What strange sounds! What made the sound?

City Planning

Children can plan a city, build a city, or build just parts of a city. To name a few parts, try the airport complete with airplanes, the sewer system complete with plumbing apparatus, or a museum surrounded by botanical gardens.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

Clearly, experiences in science are important to young children. As they watch, wonder, study, and question the world about them, children are experiencing science as a part of everyday living. Such experiences can help them to gain an appreciation of the world; to keep alive the sense of wonder; to understand the orderliness of the universe; and to develop a method of thinking and finding answers to questions. Evidences of science can be found in almost every classroom. This does not mean, however, that one can find a well-balanced science program in all schools for young children.

To many teachers, science has meant only a haphazard approach to nature study; the incidental sharing of a leaf, a pet, or a rock. This procedure is often justified because children bring to school that which is of interest to them and which thus forms a reliable basis for the science curriculum. Interests are important in program planning but dependence on them for the total program often results in gaps in content. Some areas receive overemphasis while others are untouched. Children's interests are limited by experience. Children may not bring a certain object to school or discuss a specific topic when they know nothing about it. However, children might become very interested if they had the opportunity to become acquainted with the subject.

In schools, the major objectives for teaching science are essentially the same at every level of learning. They vary only with respect to the developmental levels of children and are attainable at that level. However, a new kind of science must become an integral part of the elementary curriculum design. To achieve these objectives, time must be allotted for science in the daily schedule both in a direct approach to science and in an incidental or related subject approach. To achieve these objectives, children must participate--science learnings require activity.

Although the research evidence concerning the reasons why children lose interest in science is limited, there is some basis for assuming that one of the reasons is that in the upper elementary grades there may be changes in the teacher's approach. General science courses have been known to be boring, uninteresting, and considered useless by seventh, eighth and ninth-graders. The cause may be traced to the traditional methods of teaching laws, principles, generalizations and terms with virtually no supplemental experiences provided. This lack of interest may also be found at any grade level for the same reason and due to the same causes (Shuster & Ploghoft, 1970). The science curriculum must be organized consistent with child development characteristics--organized around an experience-centered approach that is provoked by intense interest.

Science in the elementary school is not considered a highly technical subject, since it is an area of learning which relates itself to the everyday experiences of students. Children are, by nature, curious. Adults know that as soon as a children begin to talk, there is an endless and continuous flow of questions: Why? What? How? and the like. To feel is a strong desire which helps children to learn through the sense of touch or "tactile perception." The

tactile curiosity of children contributes to maintaining their interest at a high level. Teacher motivation will not be difficult for the teacher who permits children to carry out their characteristics of being natural investigators. To insure that children progress in science vertically as well as horizontally, textbook knowledge is just as valuable. Therefore, children need to become familiar with sources of scientific material, science textbooks, encyclopedias, and other materials commensurate with their maturity level. Scientists have not always been successful in finding answers to their questions. Thus, the endless search to explore the unknown continues. By becoming familiar with the scientific method of inquiry, children will find a helpful tool which can be adapted for use in solving problems in their daily affairs.

Considering the encompassing, intrinsic, and far-reaching effects of the study of science as an integral part of the elementary curriculum with respect to a students' personal development as well as to the adaptability of the scientific method of inquiry to other academic areas, the writer wished to address the imbalance which currently existed in the time allotted for science in the daily school schedule. The disparity of male/female interest by the students was also addressed.

If the problem were solved, all students would become knowledgeable, use correct and precise terms and language to express their knowledge, involve their parents in independent research and investigation, create/extend curiosity beyond the schoolroom, promote science-related hobbies, utilize community science resources, and, hopefully, have far-reaching results in the students' lives. This would be achieved through the use of a Hands-On Science Discovery Museum. The writer created the museum on the Cedargrove School campus. The science learnings in the museum are activity centered using the

kinesthetic--tactile approach to learning and problem solving as well as textbook knowledge to ensure vertical progress as well as horizontal progress. Adult volunteers and volunteer specialists were needed to assist in the operation of the museum. Adults needed to be trained as docents.

The purpose of this practicum was to train and utilize volunteers to assist in NOVA: Cedargrove Children's Museum on the Cedargrove school campus.

Problem Documentation

Cedargrove School was involved in two school-wide programs. One was the School Improvement Program (SIP), and the other was Chapter I (CH I). State and Federal monies were received for the implementaion of these programs. There was accountability in all academic areas with respect to receiving the monies. A three-year plan was submitted and accepted as a part of the guidelines for SIP and Chapter I programs. Goals and objectives were written for every aspect of the school's educational setting and program. In the SIP Plan (1984-1985), under school-wide effectiveness, Objective I reads:

> All staff members will provide learning opportunities and utilize materials and resources in all subject areas that will enable each learner to meet the objectives established in the SIP/CH I plan as measured by records, teacher/principal observations and yearly evaluation of the plan. (p. 1)

At the end of the third year for which the plan was written, there was a program review by a team from Sacramento, California, representing the California Superintendent of Public Instruction.

In yet another part of the plan, under the heading planning, implementing, and evaluating the school program, Objective I read:

> The school site council members have the responsibility to review the implementation of the school improvement plan to assess, periodically, the effectiveness of the program with the principal, teachers, and other school personnel, parents, and community members.

Further, Objective I for the science component in the plan read:

> By June, students will have increased their knowledge about scientific methods in relation to natural and physical environment as measured by teacher record and observation. (p. 16)

Questionnaires were completed by members of each contributing group involved with SIP. Those groups included: teachers, district support personnel, parents, and community members. The questionnaires were then assessed by the school site council members, reviewed, and monitored on a yearly basis. In the fall of 1984, Cedargrove conducted a survey of the contributing SIP groups and submitted the results to the evaluation team from the state for Cedargrove's program review. The state's formal program review took place in February 1985.

Results of the SIP science objective, as tallied from questionnaires from contributing groups, were as follows:

The teachers were asked to respond whether the objective was met with a "yes" or "no." With 57% of the teachers responding, all indicated that the objective was not met. The site council's comment was that this was an area that needed to be addressed.

The aides were asked to respond to the effectiveness of the science curriculum area with children as demonstrated in the classroom. Their survey used a rating scale of 1-5 with 5 indicating highest and 1, lowest. There was an additional category of "Don't Know." Of the 19 aides responding, 5% rated science as 5; 26% as 4; 5% as 1; and 64% marked that they "Didn't Know."

For the parent survey a 1-5 rating scale was also used with the additional category of "Don't Know." There were 184 parent responses. Of those responding, 57 rated science as 5; 69 as 4; 34 as 3; 9 as 2; 5 as 1; and 10 marked that they "Didn't know." There was an opportunity for parents to write comments after each question on the survey sheet. Many parents took the opportunity to do so and noted their appreciation for the NOVA museum (which had recently opened) and the effect it was having upon their children and the children's interest in science (see Appendix D).

At the time of the yearly SIP evaluations, science was often listed as a weak area; and it was, therefore, discussed at faculty, SIP/CH I, and site council meetings. Parents also usually noted that science was a weak area and requested different approaches/strategies/activites to promote more interest on the part of their children. The documentation that the writer used to substantiate a need for improvement in science and, therefore, to constitute a problem to be addressed was based upon Cedargrove's 1984 evaluation of the program and subsequent program quality review by the California State Department of Education, Division of Curriculum and Instruction.

The school program quality review team reported to the Cedargrove community and sent documentation of the report to the state that Cedargrove's science objective was not met when the program was formally assessed in February 1985. The report also included the following comments:

-- Science is recognized as an area that needs to be addressed.

-- Science curriculum is primarily teacher-made units. There is a need for a sequential program which may be forthcoming through the district continuum developed this year.

-- Need for basal texts and materials at all grade levels to provide balanced science curriculum.

-- Need for an aide in NOVA Museum.

-- Consider: Plan for an all-school Science Faire [sic].

-- Commendation: The NOVA Museum is highly effective for providing a variety of hands-on, exciting, science experiences for primary grades. The museum is primarily in existence due to the dedicated efforts of Donna Mowell and principal support (see Appendix E). (p. 3 of 4)

The writer conducted oral interviews with her principal and the assistant superintendent in charge of curriculum. Following the interviews, the principal of Cedargrove School and assistant superintendent of the Charter Oak Unified School District submitted letters to the writer to further substantiate that a discrepancy existed in the schools with respect to the time given to science instruction and exploration in the curriculum and its effectiveness for affective learning by the students (see Appendix F).

In view of the documentation presented, science in the school curriculum was a problem to be addressed.

Causative Analysis

One of the most important factors in guiding the science experiences for children is the attitude of the teacher. If the teacher sees science as a wonderful, exciting subject to teach, full of new and challenging experiences for children, that teacher can make science "come alive." However, if the teacher in the elementary school thinks that a specialist should teach the subject, that teacher may fail to progress beyond using the science textbook as a reader.

Teachers discussed with the writer other reasons which definitely could be considered probable causes of the problem of insufficient time spent on science in the curriculum. Those probable causes were:

1. Insufficient classroom time. So much time is spent on reading and math instruction that there was not enough time left for all the "extras"--so they reported. Equally frustrating for teachers was the time involved in locating and collecting the necessary equipment to perform classroom experiments.

2. Outdated and unattractive textbooks. For district continuity, one series was chosen for the entire district. When there was dissatisfaction with the current series, teachers hoped that when that particular academic area was up for new state adoption of textbooks, the new choice would be better. However, state adoption of textbooks was cyclic. When the choice was to be made, teachers often complained that one publisher's series was better for the higher grades than for the lower grades--or the opposite. Kindergarten teachers found that kindergarten books often are not included in a series

preferred by the majority. Often there were dissatisfaction when a choice was made for the district.

3. Lack of materials. There was insufficient money to purchase kits containing equipment for classroom experiments. There was insufficient money to purchase adequate equipment, such as microscopes, for each classroom.

4. Teacher apathy. Female teachers themselves often had limited experiences in science so that their enthusiasm was not a motivating force.

5. Fear. Teachers reported that they felt some anxiety when they dealt with science experiences for which they might not know all the answers or if an experiment that they were doing for the class did not turn out the way it should have.

6. Space. Teachers reported that the classroom size was insufficient for hands-on science equipment/exploration. Along with this limitation of available classroom space was their concern that it was difficult to keep the children "on task" in other academic areas when science equipment was left out on a permanent basis.

7. Need for inservices on the dynamics of effective teaching methods for science. College classes in science were geared more to "what to teach" rather than "how to teach." Another thing that teachers mentioned was that those who have been teaching for some time felt the need for refresher inservices.

The Related Literature

The literature review addressed children's museums and, specifically, the impact and effective pedagogical strategy of the premise of children's

museums on science curriculum design in schools. To coincide with the museum research findings, a review of research was included which indicated ways in which the major objectives for teaching science could be met if child development characteristics were taken into consideration and used in program planning. Research showed the need for a viable, creative, inter-disciplinary approach to improve science curriculum development and design. The final area of the literature review documented the importance of parent participation with regard to the success of the child.

Museums are the fastest growing educational institutions in the United States. For many children they provide the introduction to science for many children and are a major source of continuing education in science for adults (Ault, 1985.) Teachers who were involved in Ault's study of the cooperative effects of the educational programs between The Children's Museum (Indianapolis) and the Indiana University School of Education provided data on the effect of hands-on exhibits and the development of science objectives and curricula thus resulting in improvements in science teaching techniques in the classroom.

In a study of the attention and curiosity in museums (Koran, 1984), data was collected to determine whether natural history museum visitors were attracted to hands-on exhibits or to identical no-touch exhibits. Results indicated that a significant number of visitors preferred the manipulatable settings and that children preferred to engage in hands-on experiences.

In another report, case studies were reported to show what was being done to enhance learning in schools and in vocational and general education by individuals, organized groups, social and political organizations, businesses, and institutions to come to terms with new technologies (Lariccia & Megarry,

1984). Again, permanent museum centers with their emphasis on participatory exhibits was researched with respect to the challenge posed by the new information technologies to formal education in terms of curriculum, methods, delivery systems, teacher training, lifelong learning, and equal education.

Studies of the role of all social groups in cognitive learning at hands-on science centers indicated that science centers could contribute to formal science education (Laetsch, 1980). The author's discussion of the learning involved emphasized that although the environment was informal and the learning was not sequential, awareness and interest was fostered with subsequent follow-through investigation by the group members.

Malcolm (1984) assessed exemplary programs and reported that the role of museums was one of the programs which facilitated increased access and achievement and was a contributing factor in alleviating the severe underrepresentation of American Indians, Blacks, Mexican Americans, Puerto Ricans, the disabled, and women in scientific and engineering professions.

The Boston Children's Museum described the development and implementation of a program to facilitate museum visits for handicapped children and their families. One of the objectives of the program was to provide a joyful museum experience in an evaluation-free environment. Workshops were scheduled which included program management techniques in the following areas: flexibility in timing, free choice exploration of the museum, assistance from volunteers, and simple and inexpensive activities which could easily be duplicated at home. A report (Kamien & Goldbas, 1981) on the effectiveness of the program paramenters indicated that the objective to provide a joyful museum experience was met. Impovements were suggested for future programs. They included: providing for repeat visits, communicating

with the families of the children for increased family involvement and extending the outreach program.

The development and extension of museum outreach programs is becoming an integral part of children's museums. This method of science education is proving to be economical to use considering cost factors of transportation, materials, and salaries. Using a pretest-postest format, results of a study by Smith (1981) were that a higher improvement of science knowledge was made after an outreach program as compared to an inreach visit. The author's conclusion that this method for enhanced results of measured science knowledge improvement be utilized was deemed worthy of further investigation by the writer of this practicum.

While the writer has cited specific examples of research denoting that participatory children's museums are affecting the educator's role in incorporating new trends of scientific curriculum design, it should also be noted that research is limited at this time. There is, however, an abundance of news releases in the trade and industry index and magazine index (Time, Newsweek, etc.) announcing the openings and/or additions of a children's museum to existing museums, i.e, The New York Staten Island Children's Museum, January 1986. There are also news items intended to make the public aware of the participatory aspect of children's museums. The writer was unable to find research related to an existing museum in a public school setting. Also limited is research in the area of science curriculum design as it is still in the formulative stages of redesign without sufficient time to test the far-reaching results.

In today's society, life takes place in a context of continuous change; world events and scientific discoveries happen quickly. There is immediate

social implication for every new technological advance. Thus, there is a need to view science as a major contributing source in helping science to reconcile new knowledge to solve basic social problems. In today's world, science contributes as a way of thinking. Therefore, the public elementary school science program is not intended to develop specialists; it is intended to build understandings, skills, and appreciations in future scientists and others who will work and live together. If this is to be effectively carried out, the science taught in the elementary school must provide for the developing of the scientific potential of all students (Shuster & Ploghoft 1970). If educators viewed science as problem-solving in nature, they would view their responsibility as that of guiding children into real experiences, finding solutions to problems, and interpreting these solutions in terms of their scientific and social implications. Therefore, what is needed is elementary science programs that will interest and release the thinking of all children so that they will be able to cope with a world in continual technological change.

How is a science curriculum designed to reach all students? Some children are more inclined toward science than others. Nevertheless, it is essential that all children have certain basic experiences and gain certain knowledge from science education. Holt (1980) suggested an emphasis on the child's initiative in interaction with the phenomena that make up the child's own world. Curiosity and creativity will provide more opportunities for children to ask the questions and seek the solutions. The quality of the solution may vary from learner to learner. Ward (1980) listed spontaneity, open-mindedness, and social (peer) group integration as additional principles to be considered in curriculum design. Seefeldt and Tinney (1985) also suggested that child exploration be included in curriculum design if that was approached

from the inquiry process. The inquiry process encouraged observational, classification, and communication skills and the ability to compare, hypothesize, and derive conclusions.

Zubrowski (1984) concurred that it was essential that children have direct experience with materials, i.e., they should be provided with "hands-on activities." He suggested, however, that it is just as important to structure this kind of experience. It has been long recognized that a general theme or conceptual framework is necessary for the organization of any kind of curriculum. This framework provides guidance for what is selected and gives meaning to each of the activities for the child.

Research on science education as an integral part of the school curriculum showed the relationship to child development and the need to incorporate that relationship into the development of an effective science program. Learning about science is a developmental process which is in complete harmony with the development of children (Charles, 1974). Rockwell, Sherwood and Williams (1983), Shuttlesworth (1977), and Mindness and Mindness (1972) all supported this theory. They purported that those who work with young children know that they learn best through direct experience; they retain little of what is only talked about but remember a surprising amount of what is touched, explored, and experienced. It is then the adult's job to extend the children's initial explorations and to help them develop a framework for further learning in other academic areas.

The framework grows as adults introduce children to activities which serve to broaden their initial experiences and to encourage more complex thinking. The adult acts as a facilitator who supports the children's investigations rather than that of a leader who imposes a direction.

Equally important is providing the language which will give a means of talking and thinking about an occurrence. Lewallen (1976) reported that language development facilitated the acquisition of knowledge and necessary information especially in the area of science.

Child development, therefore, has to do with general mechanisms of action and of thinking; it pertains to intelligence. When development takes place in sequence, indicating the coming of one thing after another, each step in the sequence follows as a result of some earlier happening. The sequential development of the general mechanisms allows the child to assimilate information which results in learning for the acquisition of specific skills and facts. A child's learning of any facts depends in part on the child's general capacity to relate these specific facts to other facts in a meaningful manner. It is through sequential development that the continuity between functions and responses is preserved (Kephart, 1971). Thus, when a child is involved with sensory manipulations, learning is taking place.

Jean Piaget, a Swiss psychologist who is considered by many to be the world's foremost theorist in human intellectual development, believed that intellectual development occurs by means of two inborn attributes he called Organization and Adaptation. Organization is the building of simpler processes --seeing, touching, naming, hearing--into higher order mental structures. An individual will then form his/her own systems for considering the world. Adaptation is the continuing change that occurs in an individual as a result of this interaction with the environment. Thus, it would seem possible to combine the developmental process of learning about science with Piaget's key ideas about how children process mentally. A discussion of basic science objectives, the children themselves, and science experiences indicated a relationship

between science teaching to certain development concepts of child growth. In teaching and learning, attention should be given not only to the accumulation aspects of development, but to the processing aspects as well.

Charles (1974) discussed Piaget's key ideas about how children process mentally. His is a greatly simplified version involving 12 points to be considered. they are:

1. Children's mental structures of reality and viewing the world.
2. The fixed sequences for children's mental development.
3. Children move from one stage to another at different ages.
4. Four interrelated factors influence mental development. They are maturation, experience, social interaction, and equilibration or processing the three to build or rebuild mental structures.
5. The three stages of mental development are intuitive thought, concrete operations, and formal operations.
6. Mental operations, which are conservation and reversibility, are necessary components of rational thought.
7. Mental development imposes definite limitations on what and how children learn.
8. Thought grows from action, not from words.
9. Knowledge cannot be given to children. It must be discovered and constructed through the learners' activities.
10. Children learn best from concrete experiences.
11. Children actively find out about and make sense of their world thus remaking the mental structures so that they can deal with even more complex information.

12. The remaking of mental structures makes possible genuine learning --learning that is stable and lasting.

Piaget's processing depends upon motor and sensory input. Piaget and other reseachers who used Piaget's theory and extended it, placed emphasis on the idea that the learner must take an active role in structuring his/her own experiences.

Jerome Bruner, one of the best known of the cognitive psychologists, did research related to the subject of how children learn. His research emphasized the value of manipulation (learning through direct action) and labeling (which used symbolism to reinforce the action). Bruner's research pointed out that human beings use three systems for processing information: an action system, a system based on visual imagery, and a symbolic system. Learning through the action system formed the basis for insight and understanding (Mindness & Mindness, 1972).

To summarize this section of the literature review on how the natural development of children is in complete harmony with the developmental processes involved in learning about science and thus uses child exploration and discovery in the inquiry process, think of the young child as that child watches his/her world, wonders, studies, and questions. That child is experiencing science as a part of his/her everyday living and incorporating science in a holistic sense.

By meaningfully involving parents in their children's education, it extends the learning process as much outside as inside the classroom. Parents also increase their understanding of their children's learning processes at any given age level and increase their support of the program and the school.

Children make greater gains when parents are actively involved in the education of their children (Cohen, 1982).

Since science involves daily life experiences, getting parents involved has impact upon parent-child relationships in the home. Bronfenbenner (1974) believed that children benefited from their parents' participation. Parents were as vital to the education of their children as teachers. Walberg and Anderson (1972) believed that there was a strong correlation between the home environment and parent involvement and school achievement. Mize (1977) reported that parents had a more positive attitude about themselves when they assumed staff roles as classroom aides and family-community workers. A volunteer program is dependent on the spirit and vitality of its participants.

A summary of the research that the writer did for this practicum indicated that there is a need for more science in the daily classroom schedule for students in an elementary school. If all students were exposed to hands-on science experiences in harmony with child development theories, motivation should not be a factor representing a limitation. Equality of the sexes, minorities, and handicapped with respect to exposure also would not be considered a limitation.

Child development characteristics were taken into consideration and used in curriculum development. Creative, innovative, hands-on activities with a theme or conceptual framework was necessary for the organization of the curriculum with direct results affecting the intellect. Parent participation did have an effect on the students' progress and involvement as well as affecting the spirit of the volunteers.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Statement of General Goals

The writer's goals were:

1. to train and utilize volunteers to assist the writer in a science museum.

2. to equalize the male/female time of involvement through exposure to manipulative "hands-on" materials.

3. to provide additional time for students to investigate science concepts through a pull-out program.

Behavioral Expectations

The writer's specific behavioral expectations were:

1. to increase the use of volunteers as docents in the NOVA museum.

2. to provide the opportunity for children to manipulate/use a multitude of science materials by their attendance in the NOVA museum with the result that they would have the opportunity to learn information about each scientific area exhibited in the museum.

3. to increase the amount of scientific knowledge gained by each student.

Standards of Performance

The following standards of performance were expected at the conclusion of this practicum:

1. a. Each adult participating in the docent training sessions would attend 80% of the sessions.

b. Each adult participating as a docent would mark "Good" or "Excellent" on the district evaluation form used to evaluate the inservice.

2. Each child would attend 90% of the classes scheduled for his/her class in the NOVA museum.

3. Each child would pass a posttest related to scientific knowledge learned as a result of the science classes taught in the NOVA museum and as a result of his/her interaction with the scientific exhibits in the museum.

Assessment Instruments

The following assessment instruments were used to evaluate the behavioral expectations:

1. The tool used to measure the value of the docent training sessions was the district-required inservice evaluation form. The volunteers who were participants in the docent training sessions were asked to rate three areas for inservice evaluation: content, presentation, and usefulness. Participants were

to use a 5-point scale: poor, fair, average, good, and excellent and circle the rating which they felt was applicable (see Appendix H).

2. The tool used to record student attendance in the NOVA museum was an attendance log. Actually, attendance logs were kept by both the director of the museum with the assistance of the docents and by the classroom teachers in their individual classrooms. The purpose of keeping dual attendance records was to ensure that the classrooms functioned smoothly in the event that there might be a substitute. Since only half of each class visited the museum on a scheduled day and at a scheduled time it was imperative for internal classroom management/planning purposes that the teacher/substitute be aware of the attendance lists.

3. The tool used to measure the gain in scientific knowledge by students was a pre and posttest. The assessment instrument/test for students was developed by the writer in collaboration with the principal. The kindergarten, first, and second grade teachers administered the pretest in their individual classrooms. The kindergarten and first grade teachers administered the test orally. The students responded orally and volunteers recorded the answers. The second grade students took a written test. The posttest was administered in a similar manner. This test included questions from some of the areas of scientific study represented in the museum. The test was also related to scientific knowledge taught to each student. Of the 30 scientific areas represented, 15 were used on the test (see Appendix G).

In addition to the assessment instruments as listed in the previous paragraphs, the writer kept a weekly log (with daily entries when applicable) to record relevant information and unexpected events about the solution selected throughout the implementation of this practicum.

Each of the behavioral expectations/objectives, assessment instruments/ evaluations, and standards of performance/results are shown in Table 1 which follows.

Table 1

Objectives, Evaluations and Results

The use of volunteers as docents in the museum would be increased. The docents would attend training sessions and show increased awareness of science skills and concepts to be developed in the scientific areas represented in the museum.	The district required inservice evaluation form would be used. A record was kept of those attending.	80% of the adults in attendance at the training sessions would respond with either "Good" or "Excellent" on the items on the form used to evaluate the inservice. 80% of the adults would attend the inservices.
Students would manipulate/ use a multitude of materials by attendance in the museum, with the result that the children would have the opportunity to learn information about each scientific area.	Attendance records would be kept by the director/ docents and by the class-room teachers.	There would be 90% attendance by each class in attendance.
Students would increase the amount of scientific knowledge gained in specific areas of exploration in the museum.	Pre and posttests would be administered to the students.	Each child would pass the posttest with 80% accuracy.

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solutions

There were several possible solutions to the problem of the imbalance which existed in the curriculum with respect to time given to the science component. There was also a disparity which existed with respect to male/female interest, involvement, and enthusiasm in science with the male interest overshadowing the female interest or with what would seem to be female apathy at best.

One solution was to schedule more field trips for the students. This was certainly a good possible strategy. However, the following needed to be considered about field trips: a) the location of the place to be visited (within walking distance of the school or to sites farther away which would necessitate transportation); b) purpose of the trip; c) length of time required for transportation and the visit; d) complexity of the concepts and difficulty of the facts to be gained; e) previsit to the site; f) funding for the transportation; g) sufficient volunteer assistance to accompany the class; and h) safety for the children.

For the writer, field trips of value would require transportation by bus; there simply were no funds for this expenditure in the school budget. Even if the Parent Teacher Association funded one trip per class, this would mean one enrichment activity. Even if additional funds were to be made available for

this purpose, the writer suggested that field trips be an enrichment activity included in the planning. However, field trips alone would not solve the problem.

Any program that is successful for the benefit of the students which is in existence should be investigated and studied for possible adoption/inclusion in a science curriculum. However, there was no guarantee that a program which is successful in one community will fit the needs of another community as it exists as a preprogramed package.

Inviting science resource people to the school to speak to the students was an excellent idea; it was one that the writer used as a part of the solution. Again, however, it was not sufficient in itself as a solution.

There could be insistence where teachers comply with the time format as stipulated by the state which has set up guidelines for academic "minutes" for each subject area. Monitoring the time, as stipulated, was usually an administrative function. This was being done, but not by the writer. Adhering to the minutes which were required led into another possible solution. That was: requiring students to do more reading in their science textbooks. Neither one of these two solutions would ensure that the scientific inquiry method would be put into use. Since one of the major goals of a science curriculum is to develop critical thinking skills using the discovery method, reading a text during a certain amount of fixed minutes and taking a test would not promote critical thinking skills.

When new state textbooks are up for adoption during a given year, there is no assurance that one series will be appropriate for every grade level. New textbooks would not solve the problem as the writer saw the problem.

Description of Selected Solutions

The writer selected one solution as a way of providing four other solutions--the four solutions would come about as a direct result of the first. She chose to train and utilize volunteers to assist in the High Instructional Touch Techniques for Science (HITTS) Museum which the writer set up on her school campus. It is known as: NOVA: Cedargrove Children's Museum.

With the use of volunteers as docents, a pull-out program was put into operation to give students additional time for science exploration. Each class was scheduled to visit the museum twice a month. Science classes were taught in the museum and time was provided to give the students the opportunity to look and touch, try things, and to find answers to questions about themselves and the world around them. Volunteers were used to guide the children in their discovery processes and to engage children's minds in the creative processes that spark imagination, language, and cognitive learning in a fun-filled atmosphere.

As an outreach of the museum, volunteer specialists were utilized in yet another way. Saturday science workshops were offered; specialists conducted the workshops.

Following inservice training sessions with volunteers, the director (the writer) and her staff served as consultants and resource specialists to the teachers for classroom follow-up of science lessons presented in the museum. Resource materials and equipment for teachers were made available as an additional service.

Volunteers assisted the director in eliciting community donations and funding to equip the museum. Fortunately, the community was supportive and eager to participate.

In California, one of the integral and important parts of SIP is its volunteer program. A reasonable objective for a statewide volunteer program is to provide one volunteer for every 10 students. Volunteer program coordinators are employed by schools implementing SIP Programs.

Generally speaking, no major educational volunteer program can meet a school's request for volunteers. The California State Department of Education reports that only about half of the number of volunteers needed are able to volunteer. Most volunteer programs rely on four population groups: parents, students, business employees, and senior citizens.

At the writer's school, the volunteer component of the SIP Program was well executed by the volunteer coordinator. The effective leadership by the school's principal and site council members also contributed to the success of the volunteer program.

Early in the fall of each year, teachers/staff are asked to complete a questionnaire which provides the coordinator with the following information: number of volunteers needed, the exact hours volunteers will be needed, and the duties which the volunteers will have during specified times of the day. Concurrently, questionnaires are sent to parents, community members, high schools, and senior citizens' centers. Often, advertisements are also placed in the local newspapers. Again, pertinent information is elicited from the respondents as to their preference of grade level, interests and expertise, choice of academic or clerical duties, and times that they would be available

to volunteer. The coordinator then matches volunteers with the staff members.

The writer drew upon this valuable resource for volunteers for her museum docents and the development of the practicum. The writer also had had personal requests by individuals who desired to assist her in the museum--which is certainly an added bonus for any educator. The writer contacted interested persons and invited them to attend the training sessions.

In perusing the proposed agenda for the training sessions, it should be noted that the school principal is actively involved in all aspects of the school program. The personal contact by school and district personnel at district functions, including training sessions for volunteers, reinforces the valuable contribution that that group is making. The members of any particular group realize that their presence is noted and personal contacts are made by all involved. This enlarges the networking system and contributes to the success of Cedargrove's volunteer program.

It was the intention of the writer that the first and seventh training sessions were primarily and specifically designed to introduce the docents to the museum, exhibits, and show a scientific and academic purpose for each exhibit. To accommodate new volunteers who were recruited and/or desired to become docents during the 10 months practicum implementation, personal introductory sessions were conducted by the writer.

The purpose of having the seventh session replicate the first session was that September marked the advent of a new school year and volunteer training would be consistent with the school's SIP guidelines. These guidelines included the supposition that a successful education volunteer program is contingent upon local districts properly translating a volunteer's energy into

effective action. Volunteers and potential volunteers would see the educational impact that their participation would have on achieving the educational goals for the students at the school site if training sessions were included in the volunteer program.

The writer conducted a total of eight inservice training sessions with volunteers. The first and seventh inservices were designed to welcome the volunteers and gave them an overview of the museum. The overview included: a) background information on the creation of the museum; b) a statement of purpose of the museum; c) the goals and objectives of the director and creator for its use by the children; and d) an introduction and tour of the exhibits. Also included, were the purpose of the docents and the valuable service they would provide for the children. The volunteers would schedule times for assisting when classes were scheduled or for supplemental but supportive duties which were necessary. Instructions were given in the ways in which each would assist. This was followed by an evaluation of the inservice (see Appendix I for the agendas).

The remainder of the inservices followed the same general format in that new exhibits and additions to existing exhibits were introduced and discussed, followed by an in-depth discussion of two or three areas each time. They were given an opportunity to express their concerns/problems and the group discussed them in an attempt to find solutions. They also gave reports regarding their assistance in making community contacts with respect to scheduling Saturday workshops and classroom visitations as well as soliciting donations from the community. The docents submitted written reports to the director. An evaluation of the inservice was completed by each of the docents

(see Appendix J). They would also be asked if the inservice provided valuable assistance to them in the execution of their museum duties.

The written evaluation and input from docents was intended to serve two purposes: a) Any individual concern could be handled privately, if necessary, and immediate action could be set into motion with documentation provided by both the director and docents; b) The documentation would then be available for the perusal of the principal, assistant superintendent in charge of curriculum and instruction, school board members, and interested visitors from the county office of education.

Calendar Plan

The calendar plan for implementation of the writer's selected solution was as follows:

January 14, 1986	Training session for volunteers Pretest administered to students
February 11, 1986	Training session for volunteers
March 11, 1986	Training session for volunteers
April 8, 1986	Training session for volunteers
May 13, 1986	Training session for volunteers
June 9, 1986	Videotape presentation prepared for Nova University Summer Institute
June 10, 1986	Training session for volunteers Posttest administered to students
July 1986	Contacts made with volunteer specialists and outreach program planning and development session

August 1986	Contacts made with volunteer specialists and outreach program planning and development session
September 9, 1986	Training session for volunteers
October 7, 1986	Training session for volunteers
October 31, 1986	Submit practicum report to the faculty of Nova University

Report of Action Taken

In the spring of 1984, the writer was awarded a grant to create a "hands-on" children's science museum on the Cedargrove School campus. It opened to the school and community in October 1984.

During the 1984-85 school year, the writer directed the operation of the museum with no assistance whatsoever. She taught science classes for the kindergarten through third grade student population on a regularly scheduled basis, hosted field trips for visiting classes from other schools in the district, and conducted monthly Saturday science workshops. This was in addition to her full-time teaching position as a kindergarten teacher conducting an extended day kindergarten program. It was an overwhelming task. However, the benefits to the children with respect to their interest and learning in the area of science were deemed to be so significant that the museum needed to be kept in operation.

The writer gathered data to support that science in the curriculum was an academic area/problem to be addressed. Additionaly, if the museum was to continue, additional assistance was needed to operate it so that more in-depth knowledge would be gained by the students who visited.

Therefore, the problem that the writer chose for her practicum subject became one of training and utilizing volunteers as docents--to assist her in the NOVA: Cedargrove Children's Museum (HITTS). In the fall of 1985, after the new school year was underway, she met with her principal and arrangements were made to proceed with the practicum topic. The inservice agenda was discussed, and it was decided to use the district inservice evaluation form for district compliance.

In January 1986, one week prior to the first meeting, an invitation was extended to interested volunteers to attend a series of educational inservices for the purpose of training them as museum docents. The pretest for students was administered by the classroom teachers. After the first week of involvement with student classroom visitations, the docents asked the writer if she would train them, daily if necessary, until they were completely knowledgeable concerning every exhibit and scientific area represented in the museum so that they could be more effective with the children and the operation of the museum. This was accomplished.

In February, letters were again sent to the docents one week prior to the second meeting. The purpose of this formal inservice was to train them in the operation of computers which were then to be made available for use in the museum. The docents became familiar with software to supplement learning in the various exhibits. A computer resource specialist assisted the writer with this training.

In response to the docents' input from the January meeting, the writer met with the principal regarding an outreach program. She then met with one of the teachers who had expressed a desire for NOVA to expand on a certain science area which she was introducing in her classroom and inquired if she,

the teacher, would be interested in assisting NOVA in the development of its outreach program. The teacher was asked if she would "pilot" the first of the classroom outreach presentations and she agreed.

In March, notices were sent to the docents, and the inservice took place. Photography specialists assisted the director with the inservice. They demonstrated how the children could make sun photos. This training was necessary because a chemical was to be used and added care and caution was imperative. The photographers quickly devised a less complicated method which did not require the use of chemicals. The camera equipment in the Kidwitness Television Studio was also explained in detail.

Meetings then took place with the director, docents, and the teacher to formulate plans which would allow for teacher input in the NOVA proposed agenda and activities for the first outreach program in a classroom (see Appendix K). At the conclusion of the outreach programs the docents and teacher submitted written reports/evaluations to the director. The docents then met to incorporate the suggestions for improvements into the ensuing programs.

The inservices continued to take place in April, May, and June. Since exhibits were changed and new exhibits added monthly, the training sessions proceeded as planned. However, two new dimensions were added to the agendas: scheduling and staffing outreach programs and field trips. The requests for outreach programs increased significantly so that field trips had to be eliminated (see Appendix L). This meant that the docents were volunteering to work in the museum almost on a daily basis since the outreach format followed the same procedure as the previous one. Meanwhile, museum classes continued as scheduled. In June, the writer was contacted by Nova

University and asked if she would prepare a videotape of the museum which would be shown at the summer institute in Chicago, Illinois. A professional filming crew arrived at Cedargrove School and proceeded to film all aspects of the NOVA museum and its program. Editing, voice-overs, and dubbing took another two weeks for the writer to complete.

In June, the writer audited a nationally funded science program held at California Polytechnic/Pomona. The purpose of the program was to learn new techniques and strategies in science curriculum planning in response to the nation's directive and goal to improve science education in the schools.

In July and August, the docents and director continued to meet to prepare for the 1986-87 NOVA program and to do curriculum planning. Outreach programs were developed and expanded to include many new topics in response to a teacher questionnaire (see Appendix M) generated by the NOVA staff and distributed to the faculty at a June faculty meeting. Additionally, new science textbooks were adopted by the school district in the spring of 1986. The NOVA staff wanted to coordinate the museum exhibits and science classes with the new science textbook material. New purchases were made and contributions/donations were solicited and collected. Docents built new exhibits and added to existing exhibits.

In September, the museum was practically destroyed by workmen installing new carpets at the school. The September inservice took place. However, it took the form of a rebuilding effort. The docents and director met frequently, actually daily, in the evenings, and on weekends, in their rebuilding efforts; and once again, the museum opened to students and the community on September 29, 1986.

In October, the final inservice for this practicum took place. One docent left NOVA reluctantly. She accepted employment in the entertainment field. Her position was filled by another docent. Therefore, the writer conducted the new docent's training on a one-to-one basis.

At the conclusion of the practicum's 10 month implementation period, data was compiled and a report was submitted to the faculty of Nova University. A copy of the NOVA museum videotape was also presented to the faculty of Nova University.

CHAPTER V

RESULTS, CONCLUSIONS AND RECOMMENDATIONS

Presentation and Analysis of Results

The utilization of volunteers to assist in the High Instructional Touch Techniques for Science (HITTS) NOVA: Cedargrove Children's Museum was implemented form January 1986 to October 1986, a period of 10 months. There were approximately 715 children involved in the practicum process during the implementation period. Of those approximately 290 were involved in the inreach museum visits, approximately 325 were involved in the outreach classroom programs developed and conducted by the director and docents, and 100 were involved in field trips to the museum.

The number of adult volunteers who were involved as docents was 10. Seven of the docents were females and 3 were males. One of the females was a full-time student majoring in theater at a nearby university. She was able to arrange her schedule of classes so that she could participate in the docent training and assist with museum visits by the children. Another held a full-time position as an administrative assistant. Her company and superior allowed her to take time off from her administrative duties to become involved as a docent in the museum. She specifically helped the children with the computers, as that was her area of expertise.

Five of the female volunteers were full-time homemakers. Of the 3 males, 2 were employed in full-time positions during the school hours. They chose to become involved to provide assistance with building and repairing exhibits as the need arose. They also acted as docents in the evenings when adult groups visited the museum. The third male volunteer was a senior citizen, a grandfather. However, his grandchild was not a student at Cedargrove School. He, by virtue of his retiree status, was able to assist in yet another way. He provided valuable assistance by making trips to investigate, price, and purchase needed items and by repairing and building exhibits during the implementation period. He also assisted during the evening sessions when adult groups visited the museum.

Of the 10 museum docents, 6 received training to enable them to work specifically with the children who visited the museum at regularly scheduled times to attend science classes and manipulate/use the multitude of science materials/exhibits. The writer was also fortunate to have other adults volunteer to substitute and/or assist with classroom outreach programs and field trips when many adults were needed to ensure that all of the learning stations were staffed. However, for the purpose of reporting the results of the practicum experience with respect to the writer's goals and behavioral expectations, only the 6 docents who were trained to work with the children in all areas of scientific study represented in the museum were used in the evaluative study.

The writer's first objective had two parts. The first part was that each adult participating in the docent training sessions for those who would be working with students in the museum would attend 80% of the sessions. Attendance records were kept at all sessions. All six of the docents attended

each scheduled sessions--and more! The requests for more than the originally planned sessions came from the docents themselves in their desire to learn more, and as quickly as possible, to facilitate and increase the learning by students which was taking place during the students' visits to NOVA.

All docents participated in NOVA's classroom outreach programs. This aspect of the practicum experience was not a part of the original plan as proposed by the writer. Rather, it came about from the docents' suggestions/ input as a way to reach more students and grade levels and to increase student knowledge in specific science areas and allow for a more thorough, concentrated, in-depth approach to that area as well as to supplement the teachers' classroom units of scientific study. This objective of the practicum experience was judged to have been quite successful.

The second part of the first objective was that each adult participating as a docent would mark "Good" or "Excellent" on the district evaluation form used to evaluate the inservice. For this evaluation, only the six who worked with children in the museum and who attended the formal inservices, were asked to complete the inservice evaluation form. Table 2 represents a compilation and summary of all inservice evaluations by the docents. Appendix N includes and reports the tallies for each of the inservices. For analysis purposes, it should be noted that there is a deviation from the original plan of eight inservices. Instead, in Table 2, the writer reports the results from seven inservices instead of eight for a total of 42 responses instead of the originally planned 48 responses. This deviation was due to the unexpected destruction and vandalism of the NOVA museum which took place during July and August 1986.

Table 2

Inservice Evaluation Summary

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content				3	39
Presentation				1	41
Usefulness				5	37

The originally planned September inservice had to be postponed until October. However, in September, the director and all 10 docents spent many days and evenings as well as weekends rebuilding, restoring, and renovating the museum. New exhibits were also added during the rebuilding period. Thus, the NOVA museum was able to open its doors once again to students and the community by the first week in October 1986.

As can be seen from the tallied results in Table 2, part b of the first objective was met. The inservice which precipitated the "Good" responses was the computer training session. From the written comments , the writer noted that all docents felt "frustrated" by the lack of proper and adequate computer equipment for the younger children to use in order to successfully complete the programs.

Another comment that the docents made was that there seemed to be a lack of age/grade level-appropriate science programs for the computer, thus making it difficult to use as a viable tool to promote and supplement science learnings for the younger children. This was duly noted by the writer, and

further investigation followed; new program purchases were made and age appropriate equipment was provided. However, a gap still existed in science program availability for use by the younger children.

The second objective was that students would manipulate/use a multitude of materials by their attendance in the museum. Dual attendance records were kept by the writer/docents and the classroom teachers. If children were absent on the day for their regularly scheduled visit, then they were rescheduled to attend another session when they returned to the campus. Again, records were maintained for all absences and follow-through was documented by the logs so that attendance by each class and class member was 100%. Since the expected standard of performance for this objective was that all children would attend 90% of the sessions scheduled for their class in the NOVA museum, the second of the writer's objectives and another goal was reached by this practicum experience.

The pretest and posttest was administered as planned to students with make-up tests given later to a few students who had been absent. Due to the ages of the students involved, 5 to 7 years, and their, as yet, non-involvement or incomplete mastery of the written communication process, the protocol for administering the test deviated from the normal procedure involved in test taking. Rather, the tests were administered orally to a group situation with the recording done by volunteers and classroom aides. The specific results for each child are, therefore, not available. However, the data presented in Table 3 reflects the number of correct responses for each question for all of the kindergarten, first, and second grade students, collectively, who took the pretest.

Table 3
Student Pretest

	Question	Number of Correct Responses
1.	Can you give the name of this shell?	32[a]
2.	How are ants like a community of people?	1
3.	What is a fossil?	1
4.	How many plants are there?	2
5.	Can you name one of the space explorations?	1
6.	What does an engineer do?	1
7.	What are the main categories in a news broadcast?	8[b]
8.	What are some kinds of electricity that we use?	0
9.	Why do magnets stick?	1
10.	What is a prism?	2
11.	What do you need to do to make a computerized car do what you want it to do?	1
12.	What is an Xray?	10
13.	What is a bullet proof vest made of?	2
14.	Can you name something that was used "a long time ago" that is probably not used today?	5
15.	How do you make a solar picture?	0

a. 31 of the correct answers were from the writer's kindergarten class. The students had just completed a study of the sea including shell identification.

b. All 8 answers were partial answers.

A sample of one of the teachers who reported can be seen in Appendix O. In this representative sample from a first grade teacher, she lists the number of students who actually responded from a class of 31. Then, she lists the answers given by those who responded. From this, the writer and teacher attempted to determine the correct responses. In several instances, only part of the answer was given making the determination of a correct response difficult.

It was reported that very few children volunteered answers. Of those who did, very few, if any, gave correct answers to the questions. Most of the children sat quietly and hoped that someone else would answer. When two or three had given answers, others would then begin volunteering the same answers, slight deviations of the first answer, or magnifications of the answers already given. The children's answers were delightful and creative to read, however.

The posttest was administered orally to the kindergarten students in the same manner as the pretest. It was decided to try to administer the posttest in written form to the first grade students as well as to the second grade students. This was done so that the teachers, docents, and writer could more accurately determine the scientific knowledge learned as a result of the inreach museum visits. Although using the written format proved difficult for the first grade students and was laborious for some, all made an admirable attempt to record their answers.

The writer would like to point out several variables which were involved in the pre and posttest format making it difficult to use for an accurate comparison study for the purposes of this practicum. First, there was the large number of students involved, approximately 290. Second, the student

population was not stable. Third, it must be acknowledged that in working with the 5 - 7 year old age group, children do not have sufficient written communication skills mastered at this point of their development to execute a written test of the length and complexity involved in scientific thinking and reasoning. It was ascertained by school personnel that the format for the pre and posttesting situation used by the writer was the best possible solution to provide a general data base with which to work as opposed to reporting precise data to substantiate that the objective was achieved.

This was determined in light of the circumstances mentioned involving the written form of the posttest. It was nearly impossible to decipher and "read" some of the answers because of the phonetic spellings which were used by the students to answer the questions. Therefore, it was decided to adminster the posttest to all classes orally and again record the group responses.

This time teachers reported that the students were much more responsive and eager to answer. All wanted to be the one to give the answer first. Their answers were correct, and this time when each volunteered an answer to a specific question, there was repetition of the same answer with the assurance that they were correct. In addition, it was reported that lengthy discussions followed. It seemed that the students were not content to "just answer the question." Rather, they wanted to tell all they knew about each subject area used for questioning. Teachers reported that they were easily able to ascertain that most students answered with an 80% accuracy rate. However, this is a general observation and assumption and does not substantiate that the objective was achieved. The students did increase their scientific knowledge--of this there is no doubt!

Therefore, since the third objective was to increase the amount of scientific knowledge gained in areas of exploration in the museum, it can be judged, generally, to have been reached successfully. It is the writer's opinion that the real success in this area is one that cannot be measured at this time. Rather, it brings to mind the question, "Will the gain in scientific knowledge have an effect upon the students' lives and thinking processes?"

Student interest, excitement, enthusiasm, and participation in the NOVA museum in the hands-on participatory program was extraordinary. There were a number of comments made and recorded in the log kept in connection with the practicum experience which evidenced the excitement of the children. Often they would greet the writer with the question, "Is today my day to come to the museum?" Or, they couldn't seem to pass the writer or one of the docents without making the comment, "I remember what you taught me in the museum." Included in Appendix P are only a few of the letters, comments, and notes which were received during the practicum implementation in reference to the children's reaction to "their" museum and museum visits. These are some of the additional rewards that accompany the one of having made a significant contribution to the education of young people that might have a bearing upon their future and as well as on their future.

Judging from the students' and docents' responses, their self-esteem was enhanced by their involvement in the practicum experience as was the writer's.

The writer's log included many letters from students as they responded to the different aspects of the practicum experience during the 10 month implementaton period. Included in the practicum report, also in Appendix O, is a thank-you note from the director (the writer) to the NOVA docents which

was given to them at the June luncheon inservice. The note included excerpts from some of the children's letters.

An additional and welcome benefit that came about as a result of the docent training sessions is that fund raising ideas were generated by the docents in order to fund and expand the museum's exhibits and programs. The principal advised the writer to approach the Parent Teachers Association (PTA), as a matter of protocol, to ask assistance in "holding" and "dispersing" any funds which might be generated in the effort to raise money to financially assist the writer with the museum. The PTA took immediate action to put the NOVA museum into its budget, and the PTA financial support is now funding the outreach program. The docents were so encouraged by the support that they immediately made plans to expand the outreach programs to include the entire student population in kindergarten through fifth grades. As a result of information provided on a questionnaire which teachers completed and returned, the docents spent the summer months developing programs to assist the teachers.

Saturday NOVA science programs were well attended by students, interested children from other schools or communities, and parents. Additional adult volunteers were always on hand to assist with the Saturday programs or workshops. When workshops were offered and attendance had to be limited, there was a waiting list so long that the workshop could have been given at least three times in order to accommodate all those who signed up. Saturday programs included: Star Trek - A Visit to our Galaxy; Solar Energy; Photography and Sun Printing; and Fossils and Dinosaurs. Resource specialists willingly donated their time to conduct the Saturday programs and workshops.

The practicum experience, in summary, began with the recognition of a need to obtain assistance with the operation of the NOVA museum if the museum were to continue to serve the student population of Cedargrove School. Assistance was also needed if the museum were to be used for more in-depth science learning for the students using the "hands-on" experiences to promote the inquiry method of learning. Thus, volunteers who would be trained as museum docents were essential to work with the director and students. Additionally, documentation evidence indicated that the science curriculum objectives were not being met for students. The State Review Team recognized and commended NOVA museum as a viable tool to be used in solving the problem which existed with respect to the imbalance of time given to science instruction in the curriculum.

Conclusions

The writer completed an intensive planning phase and proposal for the practicum. Docent training began and a series of inservices took place during the implementation period. The writer's log showed that several unexpected events came about as a result of the practicum implementation. They included: a) additional docent requested inservices other than the monthly meetings planned by the writer; b) the creation and development of a successful outreach program; c) the expansion of the outreach program to include the entire kindergarten through fifth grade student population; d) docent assistance with fund raising; e) PTA financial assistance; f) the apparent destruction of the museum during the summer months; and g) the tireless, loving, rebuilding efforts on the part of the docents in September of

1986. The 1986-87 school year museum opening was only delayed! The events described were a result of the docent training practicum experience by the writer. The children are the benefactors as they once again "Discover and Experience Science Hands-on" in the NOVA museum.

In the light of the goals and objectives of the program having been met, the data analyzed, and the enthusiastic response of the children and adults involved, this practicum experience is judged to have been a success.

Recommendations

Due to the high interest and increase in scientific knowledge gained by the students who were involved, it is recommended that the NOVA museum and program continue--and continue to grow and expand with the excellent guidance and assistance from the NOVA docents. It is also recommended that fund raising efforts continue to be explored in addition to the PTA funding to generate funds for this expansion. Additionally, the writer recommends that, if space is available at any given school site, a "hands-on" museum be created. If space is not available, and often it is not, then an adaption of the concept be created and the outreach program aspect with the "hands-on" participatory "traveling" exhibits be utilized to supplement the teachers' classroom programs.

An additional but important recommendation is that more work be done to develop an age appropriate test(s) to be used in connection with the museum science classes related to scientific knowledge. A suggestion would be to devise and develop a test with multiple choice answers presented pictorially. Then, after the question is read by the examiner, the students would merely circle the graphically presented picture which would best answer the question.

The results of the tests for each child would assist the museum staff members by allowing them to know which children would benefit from individual attention in specific areas. Test results for each child would also benefit the classroom teacher in communicating and reporting a science grade to the parents.

Dissemination

The writer plans to apply for a mentor-teacher position in science with the goal of reaching other teachers to share the information learned from this practicum experience--particularly with respect to the need for organized, participatory involvement by the students. A program with trained docents could be organized and set up at other schools to assist the teachers in promoting science.

The writer also intends to continue to conduct inservices, upon request, to share and disseminate the information from the practicum. A useful tool as a part of the inservices will be showing the NOVA museum video which the writer created and produced for Nova University. The writer has also made the video available to Nova University to be used by the faculty to visually demonstrate an example of the practicum experience for students who are entering the Ed. D Doctoral Program in Early Childhood Education.

It is the intention of the writer to submit an article for publication about the museum and docent training program. In addition, the writer plans to develop and present a paper at a professional meeting such as the National Association for the Education of Young Children (NAEYC) and/or a science educators' organization.

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APPENDIX A

COPY OF GRANT

APPLICATION FOR MINI-GRANT FOR INSTRUCTIONAL LEADERSHIP

Region 15 Curriculum and Instructional Leaders Committee

Project Title: High Instructional Touch Techniques for Science (HITTS)

Summary: Project HITTS is designed to enhance the science component in the educational program by making a direct HITT. It will incorporate high techniques with high touch and use the sensory approach to the introduction of science in the K-3 curriculum and reduce the disparity which now exists concerning the male/female interest and involvement. It will involve creating a classroom on the campus with the science "climate" replicating the Children's Museum in Los Angeles. The sensory stimuli will strongly influence a non-sexist interest at an earlier age and academic performance and involvement in the classroom science will improve.

The uniqueness of the project is that it is a viable way to use an available classroom to stimulate interest and a modern version of the ancient Greek ideal--creating balance in the curriculum according to John Naisbitt in Megatrends.

Grade Level: K-3

Project Is: Innovative

School: Cedargrove Elementary

District: Charter Oak

Contact Person: Donna Patrick/Donna Mowell

Phone: 818 966-8785

Funds Requested: $1,000.00

Program Rational: Project HITTS will create a classroom on the Cedargrove school campus replicating the Children's Museum in Los Angeles. It will utilize interest manipulation areas such as: Sense Center, See the Sea Urchins, Magnetism and Electricity, Growing Center, Mini-chemistry Center, Flight, and Video. Although the primary purpose of the project is to stimulate a non-sexist early interest in science, it needs to be recognized that the project will contribute to students' academic achievement in individual classrooms. Classes will be conducted monthly using volunteer community resource specialists. There will also be peer tutoring/teaching by the sixth grade students on campus. Since the purpose is to expose the earliest public school age children to the community science resource center(s) and then extend it into the school on a continuing basis, a field trip to the Children's Museum in LA for kindergartners will be a part of this way to promote science exploration. The HITTS room will provide a continuation of the "hands-on" field trip learning experience.

Multi-sensory specific lessons, supplemental curriculum materials as well as basic equipment and supplies will be needed for the implementation of this highly motivating and creative program.

The program will include a teacher/aide inservice on the use of the room and effective teacher strategies for the expension of the monthly classes. Community parent volunteers will be involved.

The project will provide a positive change in non-sexist science involvement. The other four elementary schools will be invited to observe and participate.

Objectives:

1. Increase students' knowledge of science concepts and adaptation to daily living.
2. Expand and enrich the level of enjoyment and involvement in science.
3. Increase teacher/aide/volunteer and parent level of enjoyment and involvement in science.
4. Build a strong and integrated science educational program at the multi-sensory age development level of children.
5. Change students' attitude toward science.

Evaluation:

1. Sampling of student/teacher/aide/parent questionnaires on the value of the program based on personal enjoyment, curriculum, student level of success and extension of the science learning into the home and use of community resources.
2. Accounting of the use of the resource room and services.

Activities:

1. The administrator will be responsible for the coordination of staff and volunteer involvement and purchasing of equipment.
2. One staff member will assist the administrator in the implementation of the project. This staff member will coordinate the involvement of other staff members and conduct and inservice.
3. All K-3 students will participate in the project as well as sixth grade students will wish to participate in the voluntary tutor/teaching aspect.
4. The timeline will utilize a semester for investigation for organization, investigation of purchasing and/or donations of completed project to begin September 1985.

TIME LINE

Investigation of Childrens' Museum - 2 trips for consultations for room organization and materials.	Mar. & Apr. 1984
Investigation for purchasing or obtaining volunteer materials	Mar.-Apr.-May June-Ju.-Aug. 1984
Field Trip	Sept. 1985
Final Evaluation	Feb. 1985

Monitoring and Evaluation: The ACSA administrator will monitor and submit reports in conjunction with the assisting staff member consistent with the timeline submitted. The ACSA administrator will assist the staff member(s) in the preparation of teacher made pre and posttests to assess academic involvement and student learning in relation to the classes given. The administrator will also assist the staff and site council members in the preparation of the questionnaire. Pre and posttests will take place in conjunction with the field trip. Pretesting will be done in Sept. 1985 with posttesting to take place for final evaluation/reports in February 1985. An inservice evaluation instrument will also be used.

APPENDIX B

VISITING GROUPS

Memorandums and Articles

CHARTER OAK UNIFIED SCHOOL DISTRICT

M E M O R A N D U M

TO: Donna Patrick, Donna Mowell

FROM: J. Bonnie Bowman

SUBJECT: Nova

Thank you for suggesting that the Elementary/Intermediate Curriculum Council meeting be held in the Children's Museum at Cedargrove School.

I thoroughly enjoyed becoming a child again, looking at and experiencing the wonderful array of learning opportunities available. The museum is a work of art conceived and implemented into being through much thought, hard work, imagination and, the number one ingredient, LOVE. What a rich and wonderful living legacy you are providing.

On behalf of all the children who are or will be fortunate enough to enjoy it, I wish to thank you.

Donna, your presentation to the principals was magnificent.

I was so proud of you!

JBB:mk
10/25/84

Photo / Tom Hinkle

All dressed up

DeShon Bryant, left, learns what it's like to dress like a firefighter while his friend, James Davies, politely tips his policeman's hat to a visitor. DeShon and James were visiting the hands-on children's museum at Cedargrove Elementary School in Covina. The museum helps small children learn about science-related careers.

Touch makes learning real

By STEVE TAMAYA
Staff Writer

The hands-on children's museum at Cedargrove Elementary School in Covina may not seem like much by itself.

But put about 20 children in the museum, and the place comes alive.

In the museum's learning areas, students can examine small X-ray machines, try on bullet-proof vests or study preserved marine animal specimens.

Teacher Donna Mowell, founder and curator of the museum, said children enjoy learning more when they can touch or even wear the items they see in the facility.

"When you see something like a big dinosaur in a museum, even adults have a tendency to want to touch it," she said.

"Kids are the same way. They have to touch to learn things."

Mowell said the museum is able to offer such an interesting variety of learning experiences — ranging from police science to astronomy — because of display items donated by teachers, parents and even some of its student visitors.

"It has just snowballed," Mowell said of the museum's widespread public support.

"When I talk to people about donating something, the usual response has been, 'If it's for the children, then sure.' "

The list of contributors is impressive. One father regularly donates the preserved marine specimens for the museum's oceanography section; another parent designed the spacesuit students try on in the astronomy section.

A doctor in Fresno who heard about the museum provided a battery-powered toy police motorcycle for the facility's police science area.

The Covina police and fire departments have also chipped in a number of items, including a safety exhibit that teaches students how to double-lock their doors.

NOVA
CEDARGROVE
CHILDREN'S MUSEUM

Cedargrove Children's Museum officially opened its doors to the community at Meet-the-Teacher night October 2, 1984. The opening took place at 8:00 p.m. after parents, along with their families, gathered in the Museum, and remembered when they, too, were students and experienced the joy of scientific discovery. The staff at Cedargrove appreciates the warm support of the community in their new project.

Cedargrove would like to extend an invitation to all Charter Oak elementary classes to visit the Museum.

The Museum is named NOVA which means a newly discovered star increasing in brightness. It is a place for children to experience discovery through hands-on involvement. Project HITTS--High Instructional Touch Techniques for Science--was designed to enhance the science component in the educational program. The "Hands-On" approach to discovery is to utilize sensory stimulation for learning.

Project HITTS was funded by a mini-grant from Region 15 of ACSA--Southern California Administrators thus enabling Cedargrove's Museum to be created.

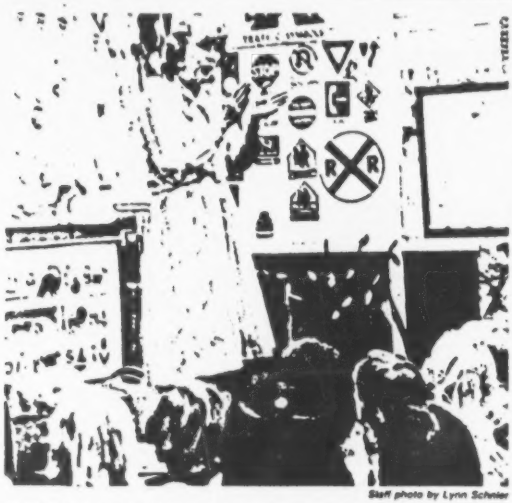
At this time, there are fifteen areas or science components to be explored. They are: oceanography, biology, earth's surface and creation/geology, space and astronomy, flight, engineering, video, electricity, magnetism/gravity, vision/optics/color spectrum, computers, healing careers, science-related careers, technological advances, and solar energy. These areas will change during the year.

Cedargrove's kindergarten through third grade classes have regularly scheduled days and times for their science classes and visits. The Museum also offers monthly Saturday classes. Our first guest speaker was astronomer Ron Darbinian, who took the children on a Star Trek.

There has been tremendous community support for our Museum. The list of donors who contributed, made and loaned items is impressive. To all, Cedargrove expresses it's appreciation on behalf of Charter Oak Unified School District students. The universal response was: "If it's for children, we'll do anything to help." Truly, children are the "windows to the future"--our NOVA stars just beginning to shine.

CEDARGROVE ELEMENTARY

Cedargrove students profited this year from the innnovative projects devloped by various teachers. Donna Mowell created the NOVA Museum that has been a colossal success in offering children the "hands-on approach" to scientific discoveries. Her museum was recognized by the county as being an exemplary program for the 1984-85 school year. Donna was also recognized for her programs and services by the National PTA. She ws honored recently at a banquet and presented an award by the PTA of California.



Staff photo by Lynn Schnier

DEDICATED TEACHER—Donna Jean Mowell, kindergarten teacher at Cedargrove School in Charter Oak, leads the class in a morning sing-a-long, surrounded by her students and their colorful classroom.

Teacher's caring attitude brings national recognition

By Lynn Schnier
Staff Writer

Kindergarten can be a fun, growing and learning experience for children. That summarizes the attitude of Donna Jean Mowell, a kindergarten teacher at Cedargrove Elementary School in the Charter Oak Unified School District.

And her attitude and enthusiasm in the joy of teaching won Mowell a coveted honorable mention in the 1985 National PTA Phoebe Apperson Hearst Outstanding Educator Award. Mowell is only one of four teachers in the United States to receive an honorable mention. A principal from Orange copped the teacher of the year award.

Patti Franssen, president of the Cedargrove PTA, had nothing but praise for Mowell, who has been teaching kindergarten for 24 years.

"She is a caring,d dedicated person to every child," Franssen said. "Everyone who comes here wants their child in Mrs. Mowell's class."

And Mowell makes them feel welcome. Mowell has been known to put in extra duty, above and beyond the call of teaching.

When Spanish-speaking children began attending her class, Mowell enrolled in a class to learn the language. She now teaches her young charges basic conversational Spanish as a result.

A Japanese child, who spoke no English, soon appeared in Mowell's class, so she "learned enough Japanese over a weekend" to help the child, and his mother, to be comfortably integrated into the classroom experience.

Mowell also seeks the active participaparticipation of parents to continue teaching the child at home. She compiles a monthly letter to parents which outlines the objectives for the coming weeks and includes a calendar of school activities. Suggestions are also included for parent involvement and learning games for the family.

Mini-sessions with the parents coming into the classroom during the evening are held periodically so that parents may observe and experience kindergarten learning with their children.

But Mowell's teaching activities don't end at the final ring of the school bell in June. This year she plans to finish her requirements for her doctorate degree in early childhood education.

Last summer was noteworthy, though,.

In her free time Mowell established a miniature version of the Los Angeles Children's Museum in an empty classroom at Cedargrove.

Mowell admits to "begging" for the needed materials, but once community members found out the project was for children, they willingly donated.

The Cedargrove Children's Museum contains a mini-television studio, complete with television camera and video monitor; a "space lab" with space suit and tapes outlining a trip to outer space, fossils, sea shells, doctor and dentist charts, equipment and x-ray machines, a "time capsule" which takes students back to see what life was like 100 years ago and magnets and woodworking.

Mowell also invites children in the community, who may not attend Cedargrove, to attend the monthly Saturday morning workshop.

When Mowell isn't teaching, talking with parents, designing lesson plans or looking for new exhibits to put into her museum, the Claremont resident participates in the National Association and the California Association for the Education of Young Children and the Alpha Iota Chapter of Pi Lambda Theta, a national honor society.

Mowell also manages to squeeze in some time for her three children, Derek, Shawn and Jean, and her two-year-old granddaughter Shavawn.

But mostly, molding young minds is her pride and joy. "Children always have a better way to build a mousetrap. Let them guide you."

70

78

FAMILIAR FACES / Steve Tamaya

It's been winning year for Cedargrove teacher

A staple of Donna Mowell's philosophy as a teacher is that no matter how good one year is, the next year will be even more exciting.

That belief will be sorely tested based on the past school year, which ended last month.

For Mowell, 49, it has been a memorable year. The hands-on children's museum she developed last year at Cedargrove Elementary School in Covina was given an exemplary program award by the Los Angeles County Office of Education.

And, Mowell herself was named one of only four runners-up nationwide in the National PTA's outstanding educator of the year award competition. The state PTA, in recognition of the national honor, also gave the Claremont resident an award.

In addition to all the accolades, Mowell, a widow with three children, has recently become engaged. She and her fiance are to be married later this year.

Reflecting on the year's chain of events, Mowell simply describes it as "wonderful."

Mowell, who primarily teaches kindergarten, said she would have been merely satisfied with the museum award and her nomination by the Cedargrove PTA chapter for the national competition.

"I just thought being nominated was a reward in itself," she said. "When someone believes in you, it really makes a difference."

In its letter of nomination to the National PTA, the Cedargrove unit wrote about the museum Mowell opened last summer, which features miniature versions of actual learning centers at the Los Angeles Children's Museum.

The local chapter also cited her emphasis on individualized instruction for students, telling the story about how Mowell began learning Japanese during her spare time after a Japanese student who did not speak English entered her class.

Since the student's mother also spoke no English, Mowell's effort to learn Japanese enabled her to communicate with the mother as well.

"As old-fashioned as it may sound," the letter said, "her children and their parents all love Mrs. Mowell — and she loves them. This is her secret ingredient that inspires the children, both academically and personally."

Mowell was preparing for open house May 9 when she received a phone call informing her of the national award. Another caller a few minutes later asked her if she could attend a state PTA banquet that evening.

"Here I was ready for open house and they wanted to me to go to Anaheim," she recalled. "I had to jump in my car and race home, and I asked my fiance if he could come with me to the PTA dinner instead of open house."

The night before that tumultuous day, Mowell had received a call about the museum award. She said she failed to immediately realize all that was happening to her.

"After everything was all over, I was sitting at home over the weekend and then I thought, 'My gosh.' That was when it hit me."

Mowell has been a teacher for 24 years. She began working for the Charter Oak Unified School District in 1964 after her husband at the time, Jerry, moved to the area and told her "There isn't any better district than Charter Oak."

The move was also based on her preference to teach kindergarten.

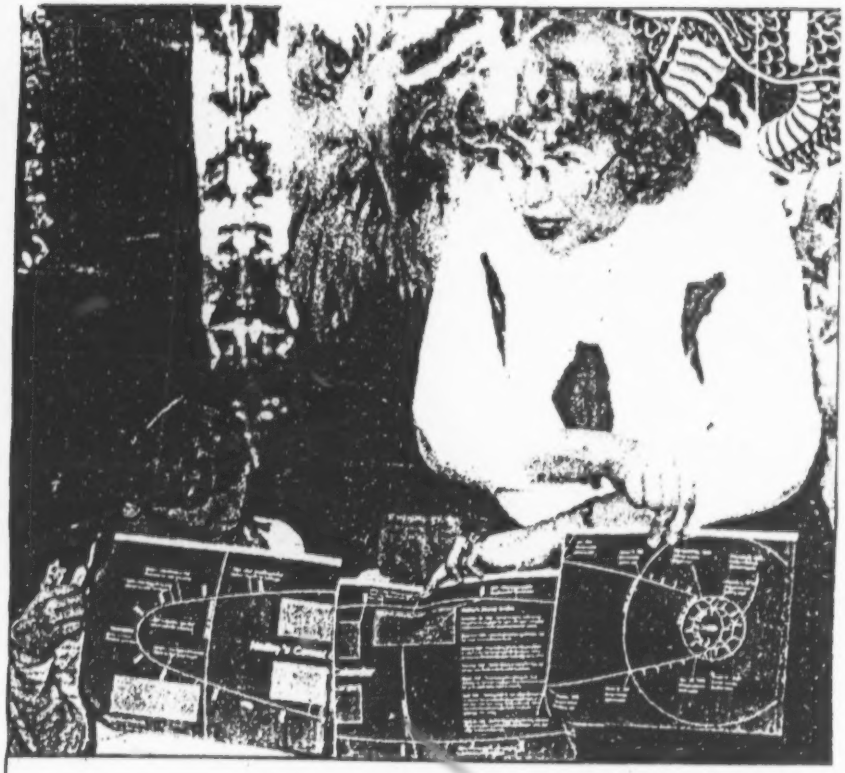
"I wanted to get them (students) first," she explained. "Their attitude at that age is that the whole world is so new and exciting. I wanted to show them during their first year how exciting school is."

With her students in mind, Mowell named the hands-on museum she founded Nova. She came up with the name because a nova is "a new star that increases its brilliance."

"When I told the students about the award for Nova, they all cheered for the museum," Mowell said. "And then one child said to me, 'See, our star did get brighter.'"

Photo / Tom Hinkle

Cedargrove School's Donna Mowell wants to make the next year's class even more exciting than the last.



Staff photo by Gary Gossett

Halley's is coming

Nationally-recognized educator Donna Hughes demonstrates the orbit of Halley's Comet to second-grader Heather Pierce. The Cedargrove Elementary teacher utilizes creativity in her instruction which, she feels, enables the students to understand the significance of the icy meteor. See Page 15 for related story.

SCHOOL NOTES

Imagination brings Halley's Comet to Cedargrove School

By Sam Harper
Staff Writer

The countdown begins — "10-9-8-7-6."

Cedargrove Elementary second-graders wait anxiously.

Their celestial voyage is about to begin. Destination: Halley's Comet.

"Take off lights on," reports teacher Donna Hughes as she engages the toggle switch, illuminating the red and yellow Christmas tree lights strung along the corner of the classroom wall.

"5-4-3-2-1"— liftoff.

Rocket engines, imitated by the students' droning, clearing-of-the-throat crackle, begin to kick in.

The childrens' jubilant applause, combined with the dimming of the classroom lights, indicates that all systems are "go."

The Cedargrove second graders are now in space, headed for the wispy tail of the comet. They are eager to learn because, now, they are astronauts.

"Once you get their interest you can teach them anything," explained Hughes, who, last year, was among five finalists chosen for the "Phoebe Apperson Hearst Award" given to the nation's most outstanding educator.

"They don't have to come in here, sit down and say 'Okay, we've got to read our science books.' Science isn't dull as long as they can come in here and feel excited about it. Then they will learn because they want to."

Inexhaustibly enthusiastic, Hughes has been using these "first person" learning techniques for several years and, most recently, applied them to the appearance of Halley's Comet, an event she stresses to her students as having "major implications" for their lives.

"It isn't just a phenomenon that they are just going to witness and then forget about. It has implications," asserted the exuberant teacher and science buff.

Hughes explained that, along with its rare appearance, the comet has atmospheric effects.

"When the comet comes nearest Earth, it will give off gases that will affect weather. I think this is very exciting," she said.

Normally a full-time kindergarten teacher, Hughes teaches science to first through sixth graders at various timesduring the week. Thus, all of the students at Cedargrove get an out-of-this-world learning experience.

Using an ordinary flashlight in the darkened room, Hughes projects the light's beam upon an illustrated solar system just below the "take-off" lights. When the beam nears Jupiter, Hughes asks the children what it is.

Excitedly, a majority of them correctly identify the beam as a comet.

"But is this Halley's Comet?" she asks, throwing the beam out of the solar system and into the void.

"No," reply the students.

"Why not?" Hughes persists.

After a bit of group guessing, Hughes explains to the students that, most comets, too small to withstand the force, live only long enough to have their firey gases extinguished by solar winds, leaving a core that eventually melts away.

Hughes goes on with the lesson, once again moving the beam to Jupiter. This time she holds the imaginary meteor closer to Earth.

The children unanimously recognize this as Halley's.

"Why?" prompts Hughes with wide, inquisitive eyes.

"Because it's humongous. The winds can't blow it out," responds a small contingent.

Grasping Hughes elementary-but-concise allegories, the children learn that the comet's tail is created by these same solar winds, which comb the icy meteor's gases back away from its core.

"What's the grown-up word for core or center?" she asks.

"Nucleus," her students respond.

Hughes' teaching tactics also include "Kidwitness News," a student-produced, directed and anchored news program videotaped on a classroom camera operated by students.

"I believe that the kids have to be able to want to learn. If you make it interesting for them then they will eventually ask the questions.

"And that's the best way to learn."

NOVA: CEDARGROVE CHILDREN'S MUSEUM

NOVA would like to take this opportunity to thank so many for the good things which are happening as a result of thoughtful and caring people; people who are directly affecting the education of children.

During the afternoon awards presentation following the Math-a-Thon, the PTA fund raiser, a check for $200.00 was presented to NOVA by the PTA. What a wonderful gift! The children felt that NOVA was even more "theirs" since they had earned the money to make the gift possible. Almost daily, I was asked what I had bought for the Museum with their money. It was good to experience their pride in their science "hands on" Museum. The PTA has included NOVA in their budget for future years.

Alisha Kahn once told my kindergarten class that PTA should be PTCA --the "C" representing "children." How true because at Cedargrove it is a partnership with the parents, teachers and children all working together to help the school.

PTA - NOVA students, docents, director, teachers and principal thank you.

NOVA also salutes it's docents who assist with teaching science to the K-2 students in the Museum. They also assist with the operation of new ideas for exhibits AND care of the exhibits. They are: Mrs. Kelce, Mrs. Guin, Mrs. Owens, Mrs. Neville, Mrs. Strinz and Mrs. Zaccaro. Can you imagine! They thank me for the opportunity to play in the Museum each week.

Recently, the staff was informed of an essay contest on Physical Fitness sponsored by Ralphs. The winner would receive a computer and win one for the school as well. Several students have entered the contest in the hopes of winning a computer for the NOVA Museum. Here's hoping!

Magnetism has been the specific area of study this past month in NOVA with many experiments to try. The students were invited to do further research and submit papers writing up their research findings.

Using the sun's energy to make sun photos was the second project for the month. Steve and Erma Coman assisted the docents and children with materials and Erma Coman conducted an in-service for the docents.

An exciting new program is now being offered by NOVA. The Outreach Program takes NOVA into the classrooms! The docents suggested this program as a means to assist classroom teachers. We will work with individual teachers to provide enhancement activities to supplement that teacher's specific science classroom study. Dinosaurs Reach Out with Mrs. Garcia and Mrs. Selak were our first endeavors. The docents report that they are impressed with the students' thinking and reasoning skills. They enjoy working with your children!

APPENDIX C

1985
EXEMPLARY AWARD
HONORABLE MENTION

Los Angeles County Office of Education

Hi Dorothy
Please bring
this man to Hill
down us!
DP

May 10, 1985

Stuart E. Gothold
Superintendent

Los Angeles County Board of Education

Ruth Bloom
President

Michaelene D. Wagner
Vice President

Lawrence J. Kaplan, D.D.S., F.I.C.D.

Mary E. Lewis

Ricardo J. Olivarez

Earl V. Pullias

Daniel L. Towler

Robert A. Everhart, Superintendent
Charter Oak Unified School District
20240 Cienega
Covina, CA 91723

Dear Dr. Everhart:

Subject: 1985 Exemplary Programs Awards

This is to confirm that your nominated project has been judged truly outstanding and deserving of special recognition, even though it was not selected for the first-place award in its category. In order to recognize these programs, we are awarding several honorable mentions in some of the categories on the attached list of the 1985 Exemplary Programs Awards sponsored by the Los Angeles County Board of Education.

We extend our congratulations, and we commend everyone who contributed to making the program successful.

The awards ceremony will begin at 4 p.m. in the Board Room at the County Education Center, 9300 E. Imperial Hwy., Downey, on Monday, May 20. The awards will be presented by Ruth Bloom, president of the Los Angeles County Board of Education, and Stuart E. Gothold, county superintendent of schools. When your award is presented, you--or a spokesperson for your district--will be invited to say a few words. A total of 27 awards will be given, so in the interest of time, please make your statements brief.

Following the awards presentation, light refreshments will be served, and you will have the opportunity to talk to our staff and staff from other districts. We hope your district will be represented at the awards ceremony to receive public recognition for your excellent achievement.

Again, our congratulations.

Regards,

Bob Grossman

Robert L. Grossman
Public Information Officer

RLG:v

Encl.

9300 East Imperial Highway, Downey, California 90242-2890 (213) 922-6111

1985 Exemplary Programs Awards

Categories	Exemplary Program Winners
1. Attendance, Welfare, and Health Services	Rowland Unified "Attendance Improvement Program"
2. Business and Finance	Cerritos Community College "Off-Peak Cooling System"
3. Communications and Community Relations . . .	Norwalk-La Mirada Unified "Foster Road School's Community Relations Program" Honorable Mentions: Alhambra "Mark Keppel High School's Adopt-A-School Program" Culver City Unified "Surviving the '80s" Glendale Unified "Community Taught Alternative Learning Day"
4. Computer-Assisted Instruction . .	Saugus Union "Smart Users Control Computers: Every Student Succeeds (S.U.C.C.E.S.S.)"
5. Curriculum and Instruction - Elementary	Montebello Unified "Long, Long Ago Oral History Project" Honorable Mentions: ABC Unified "Teacher Directed ESL Instruction" Charter Oak Unified "High Instructional Touch Techniques for Science (HITTS)" Hacienda La Puente Unified "A Journey Through Time" Lancaster "Piute Ponds" Los Nietos "Success"
6. Curriculum and Instruction - Secondary	Montebello Unified "Long, Long Ago Oral History Project"
" "	Hacienda La Puente Unified and La Puente Valley ROP "Pregnant Minors/School Age Parent Consortium"

7.	Evaluation, Measurement, and Research	**Saugus Union** "Test Scoring Systems"
8.	Instructional Media and Technology	**Claremont Unified** "Media Communications for Students"
9.	Occupational Preparation	**Covina-Valley Unified** "An Educational Partnership with Industry"
10.	Personnel Practices	**ABC Unified** "Health and Fitness Program" Honorable Mention: Saugus Union "Incentive Workshops"
11.	Pupil Personnel Services	**ABC Unified** "Elementary Guidance Organization (EGO)" Honorable Mentions: Saugus Union "Internship/Counseling Program" Wilsona "Peer Counseling"
12.	Special Education	**West Covina Unified** "The Career Planning Folder"
13.	Staff Development - Certificated	Lennox "New Teacher Training Program"
	" "	Norwalk-La Mirada Unified "Nottingham Effective Instruction Model Program"
14.	Staff Development - Classified	**ABC Unified** "Staff Development - Library Clerks"

Los Angeles County Office of Education

Stuart E. Gothold
Superintendent

Los Angeles County
Board of Education

Ruth Bloom
President

Michaelene D. Wagner
Vice President

Lawrence J. Kaplan,
D.D.S., F.I.C.D.

Mary E. Lewis

Ricardo J. Olivarez

Earl V. Pullias

Daniel L. Towler

May 31, 1985

Dear Exemplary Program Awards Winner:

Enclosed is a snapshot of you accepting an Exemplary Programs Award from Ruth Bloom, president of the Los Angeles County Board of Education, during the ceremony at the County Education Center on May 20.

Congratulations once again for the outstanding success of your program.

Cordially,

Bob Grossman
Public Information Officer

BG:wlr

Encl.

9300 East Imperial Highway, Downey, California 90242-2890 (213) 922-6111

APPENDIX D

SIP/CH I GROUP
SCIENCE
ASSESSMENT
SHEETS

SIP/CH I TEACHER EVALUATION
1984

PHYSICAL EDUCATION

Objective I By June of each year, all students will participate in motor development activities and physical fitness training designed to improve physical coordination and endurance abilities as measured by teacher observation.

Objective was met yes ; 81 %

Comments 13% of the teachers did not answer this question for unknown reasons. All students did participate, however, based on teacher observation. 6% of the students did not show notable improved motor skills .

HEALTH

Objective I All students will have their health status reviewed annually, as shown by school records.

Objective was met yes ; 100 %

Comments: The nurse does a thorough job in achieving this objective .

SCIENCE

Objective I By June, students will have increased their knowledge about scientific methods in relation to natural and physical environment as measured by teacher record and observation.

Objective was met no ; 57 %

Comments: 31% of the teachers did not respond to this objective and 13% of the students did not sufficiently increase their knowledge about scientific methods. This is an area we will need to address. The continuum developed this year should prove to be valuable .

AIDES PROGRAM SURVEY RESULTS
SIP/CH I PROGRAM-1984

Levels

	Highest				Lowest		
	5	4	3	2	1	Don't know	Total
1. READING	32%	42%	10%	5%		11%	19
2. MATH	32%	31%	16%	5%		16%	19
3. SPELLING	37%	26%	16%	5%		16%	19
4. HANDWRITING	10%	22%	26%	16%		26%	19
5. LANGUAGE SKILLS	37%	21%	26%			16%	19
6. SOCIAL STUDIES	16%	21%	5%	11%		47	19
7. SCIENCE	5%	26%			5%	64%	19
8. P. E.	11%	21%	5%		5%	58%	19
9. ART	26%	32%	11%			31%	19

PARENT SURVEY

GRADE: SUMMARY

	Levels					
	Highest			Lowest	Don't Know	
A. My child is learning sufficient, skills to sound out and read words independently.	1	2	3	4	5	6
Totals:	60	72	37	8	1	1
B. My child understands what he/she reads.	1	2	3	4	5	6
Totals:	71	65	35	8	1	3
C. My child has increased in the ability to accurately follow written an oral directions.	1	2	3	4	5	6
Totals:	62	70	35	13	2	2
D. My child has gained appropriate skills to express to his/her thoughts in written language.	1	2	3	4	5	6
Totals:	46	60	53	14	2	9
E. Adequate instruction in basic math facts and skills has been provided.	1	2	3	4	5	6
Totals:	77	58	33	8	4	4
F. My child is becoming more aware of the world around him/her through concepts of science taught in him/her classroom.	1	2	3	4	5	6
Totals:	57	69	34	9	5	10
G My child receives effective instruction and practice in physical education.	1	2	3	4	5	6
Totals:	62	65	35	7	1	15

APPENDIX E

STATE PROGRAM REVIEW

TEAM'S SCIENCE COMPONENT ASSESSMENT

California State Department of Education
Division of Curriculum and Instruction

1	9	6	3	7	8	6	0	1	2	0	6	6

SCHOOL PROGRAM QUALITY REVIEW

Date 2-21-85

District	School	Reviewer
Charter Oak U.S.D.	Cedargrove	Lillian Brown

Criterion	Suggestions for Increasing School Effectiveness and Commendations
School Effectiveness:	. Broad based . All students have access to a balanced curriculum. . Issue: . While students seem to have time on task, there is a need for the students to remain focused during directed teaching and follow-up assignments. . Suggestions: Consider: . Increase teacher awareness . Increase teacher monitoring . removal of distractions (i.e., toys, inappropriate activities/items) . Need for a more well defined school homework policy - all grade levels (include monitoring)
Science	. Objective not met. Science is recognized as an area that needs to be addressed. . Science curriculum is primarily teacher-made units. There is a need for a sequential program which may be forthcoming through the district continuum developed this year. . Need for basal texts and materials at all grade levels to provide balanced science curriculum. . Need for aide in Nova Museum . Consider: Plan an all school Science Faire . Commendation: The Nova Museum is highly effective for providing a variety of hands-on, exciting, science experiences for primary grades. The Museum is primarily in existance due to the dedicated efforts of Donna Mowell and principal support.
Social Science:	. School objective met. . There is regular instruction in history and social science at each grade level.
Fine Arts:	. The nature and scope of the curriculum and expanded activities received by students - art, music, dance, communication, is evident through observation and review of relevant documents. . Since Charter Oak District belongs to the L. A. Music Center's Educator's Summer Feast, children are exposed to various fine arts performances. . Concern: Staff has expressed need for updated music books, accompanying records, and record players for the classrooms.

APPENDIX F

ADMINISTRATIVE LETTERS OF DOCUMENTATION

CEDARGROVE SCHOOL

CHARTER OAK UNIFIED SCHOOL DISTRICT

M E M O R A N D U M

TO: Donna Mowell-Hughes

FROM: Donna Patrick - Principal

SUBJECT: Curriculum

I am responding to your question concerning our identification of curriculum areas that we need to improve. Prior to our review team's assessment of our program's effectiveness, we received the previous surveys of our plan. As indicated by parent, aide and teacher evaluations, it was apparent that science was identified as an area that needed improving.

The State was focusing on a more rigorous science program and we looked at our science curriculum and it because apparent that we needed a continuum of skills, resources, laboratory experiments, guides, materials and other such resources in addition to inservices to assist us in teaching critical thinking skills.

At the primary level we uncovered a "piece meal" curriculum that consisted of various teachers deciding independently which science concepts they would teach. They did not have adequate books, guides or materials for a comprehensive, rigorous science curriculum. Therefore, in analyzing our curriculum needs, it was decided that science was definitely an area that needed our attention.

Charter Oak UNIFIED SCHOOL DISTRICT

20240 CIENEGA AVENUE • P.O. BOX 9 • COVINA, CALIFORNIA 91723
TELEPHONE: (818) 966-8331

January 27, 1986

To Whom It May Concern:

John Dewey stated that, "science should take its rightful place in the center of the curriculum." Recent national studies, as well as the California State Board of Education, and the State Legislature have all seen the need for greater emphasis on science in all the grades, but particularly in the elementary school. Except for a period following "Sputnik" elementary school science curriculum has been greatly lacking. But thanks to many current forces, John Dewey's prophecy may yet come to bear.

Respectfully,

William W. Norin

William W. Norin
Assistant Superintendent
Educational Services

WWN:clh

Nova University
OFFICE OF THE PRESIDENT
3301 College Avenue, Fort Lauderdale, Florida 33314 • 305/475-7575
Abraham S. Fischler
President

January 25, 1985

Ms. Donna Mowell
432 Greensboro Court
Claremont, CA 91711

Dear Ms. Mowell:

I just had the opportunity to read The Cluster Communicator and found a reference to the Nova Science Museum in Cedargrove School. What a fantastic idea! As an old science teacher, I believe that hands-on experiential learning in science is surely what is needed. Too often science is taught as a noun and not as a verb.

Again, congratulations to you. We are proud to have you associated with Nova University.

Sincerely,

Abraham S. Fischler
President

ASF:we
cc: Mary Ellen Sapp

APPENDIX G

STUDENT TEST

Nova: Cedargrove Children's Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

Date: January 1986

To: K-2 Teachers

From: Donna

Re: Pretest for NOVA Museum Students

In order to carefully monitor the educational value of NOVA museum with the students, it is necessary to administer a pretest. Your assistance with the administration of the test in your classrooms would be appreciated.

At this time, the science components to be explored in the museum are: sea, biology, earth's surface and creation, space and astronomy, flight, engineering, video, electricity, magnetism, vision/optic/color spectrum, computers, healing careers, science related careers, back-in-time to show technological advances, and solar energy.

Kindergarten and first grade teachers are asked to give a verbal group test and record the answers given. Second grade teachers are asked to have their students record their own answers. When giving the verbal tests, those teachers please note how many children responded to each question.

1. Can you give the name of this shell?
2. How are ants like a community of people?
3. What is a fossil?
4. How many planets are there?
5. Can you name one of the space explorations?
6. What does an engineer do?
7. What are the categories (parts) in a news broadcast?
8. What are some kinds of electricity that we use?
9. Why do magnets stick?
10. What is a prism?
11. What do yo need to do to make a computerized car to what YOU want it to do?
12. What is an X-ray?
13. What is a bullet-proof vest made of?
14. Can you name something that was used "a long time ago" that is probably not used today?
15. How do you make a solar picture?

Thank you for your help.

APPENDIX H

DISTRICT INSERVICE EVALUATION FORM

CHARTER OAK UNIFIED SCHOOL DISTRICT

Cedargrove School

Inservice Evaluation

Topic Presented: _____

Presenter: _____

Date: _____

Location: _____

Please mark your overall reaction to the inservice:

(a) Content

Poor Fair Average Good Excellent

(b) Presentation

Poor Fair Average Good Excellent

(c) Usefulness

Poor Fair Average Good Excellent

APPENDIX I

INSERVICE AGENDA

NOVA Museum Docent Inservice

Agenda

(First and Seventh Inservices)

Welcome

Mrs. Patrick - Principal

Mrs. Mowell-Hughes, Director

Overview of the NOVA museum

Background

Purpose

Goals and Objectives

Introduction and Tour of the Exhibits

Docent's purpose and responsibilities

Time scheduling for docents

Question and answer period

Refreshments

Informal discussion period

Evaluation

NOVA Museum Docent Inservice

Agenda

(Second through Sixth and Eighth Inservice)

Greeting

Principal

Director

Introduction of new exhibits

Additions to existing exhibits

Discussion of district science continuum

In-depth discussion of three science areas

Docent concerns

Reports

Refreshments

Informal discussion period

Evaluation

APPENDIX J

DOCENT EVALUATION FORM

CHARTER OAK UNIFIED SCHOOL DISTRICT

Cedargrove School

Inservice Evaluation

Topic Presented: NOVA: Children's Museum Docent Inservice

Presenter: Donna Hughes

Date: _____

Location: Cedargrove

Please mark your overall reaction to the inservice:

(a) Content

Poor Fair Average Good Excellent

(b) Presentation

Poor Fair Average Good Excellent

(c) Usefulness

Poor Fair Average Good Excellent

Please list any concerns that you might have, so that I may make this experience easier for you. Thank you.

APPENDIX K

"PILOT" OUTREACH PROGRAM MATERIALS

Nova: Cedargrove Children's Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

TO: Donna Hughes

FROM: Nancy Strinz

REF: Dinosaur Presentation - Mrs. Garcia's K. Class

On March 31st, Sue Zaccaro and I met with Mrs. Garcia to discuss presentation content, format and to set a date. She approved our outline and suggested that we separate the children into small groups and rotate through the activities. The outline of the presentation as agreed upon at our meeting is attached and the presentation was made April 3rd at 9 a.m.

On April 3rd my assistant, Jennifer and I delivered our materials to K-1 and set up the activities with the help of the classroom aide and parents. At the same time Mrs. Garcia was explained to the class what we were going to do.

After being introduced to the children I opened the discussion by telling the children what my job as a docent is and then asking them to tell me what they know about dinosaurs. I showed them the dinosaur pictures I had brought along and we talked briefly about each one. We also discussed fossils and looked at the examples I had bought from the museum. I encouraged the children to look for the fossil table on their next visit to NOVA. I ended the formal discussion period by talking with the children about the dinosaur models I had brought along and showed the children the handouts they would receive to work on at home. Discussion lasted approximately 15 minutes. The fossils and models were available on a table for the children to examine during the activity period.

The children separated into their "color" groups with each group going to an activity table. At the listening post each group heard a tape of "I Can Read About Dinosaurs." We had the dinosaur floor puzzle from the museum on another table. The brontosaurus hats had been traced onto construction paper ahead of time. The children cut them out and the adult at the table put the names on and fitted the headbands. I had made green play dough at home and the children kept his/her "best" dinosaur and put it on a small cardboard square to take home. Activities took approximately 45 minutes to complete.

We did clean up while the children prepared for this snack and recess. The complete presentation took one hour; 15 minutes longer than our estimate.

The most successful activities were the hats and the play dough. The children completed the puzzle quickly which gave the groups plenty of time to examine the model/fossil display. For the most part the children seemed to be attentive at the listening post (the tape has good sound effects).

The small group rotation worked well with at least one adult supervising each table. The size of the classroom and the seating arrangement in K-1 lent itself well to this. It was especially good that within the groups

at the activities the children continued their discussion of the various dinosaurs and many of them made it a point to share their dinosaur experiences and expertise with me.

In any future presentations I would say that the play dough could not be sent home without some funding to the docents. If a teacher wanted a shorter presentation one or more activities could be eliminated. If the presentation was to be made to older children then age appropriate activities could be substituted.

I feel that the presentation was a success and that it can be done for other classes at the teachers' request. Mrs. Garcia seemed to be pleased and I asked her to review it with you so you could pass on any comments or suggestions she might have.

/s/ Nancy

Attached:

Presentation outline
Sample Brotosaurus hat
Copies of handouts

Dinosaurs (NOVA Docents)

Discussion:

- What do you know?
- Drawings - triceratops, tyrannosaurus, stegosaurus, iguamodon, brotosaurus
- Fossils - What is a fossil? Examples from museum
- Models - plastic models and wooden skeletons

Hands-On Activities:

- Record (or tape) - "I Can Read About Dinosaurs"
- Dinosaur floor puzzle
- Dinosaur cookie cutters and play dough
- Brontosaurus hats

Table Display of models and books:

- Brontosaurus dot to dot
- Diplodocus maze
- Dinosaur hunting license

* Fossil activity (Optional):

Presentation time estimate - 45 minutes

NOVA OUTREACH - DOCENT PROGRAM DINOSAURS

Mrs. Strinz told the group of kindergarten children what a docent was. She explored briefly that the children knew and presented a few quick facts on new material. The children were alert and attentive while she spoke.

We then divided into four groups for activities.

1. Listening Post - a dinosaur tape--7 minutes.
2. Large piece Dinosaur puzzles, then explore models and real fossils.
3. Make diplodocus hats--cut and staple.
4. Playdough and dinosaur cookie cutters. Children needed instruction on using the cutters--sharp edge down. Bigger rolling pins would help. They needed to be told to leave all the cutters in the center of the table until they were ready to cut. Mrs. Strinz had cut pieces of cardboard so they could choose their best to take home. This table really worked best with 2 adults helping.

This was a delightful time for the children and fun for this teacher.

Thank you!

/s/ Loretta Garcia

APPENDIX L

NOVA OUTREACH SCHEDULE

NOVA Outreach Schedule

April 3	Mrs. Garcia	K	Dinosaurs
April 18	Mrs. Selek	2/3	Dinosaurs
May 12	Mrs. Okerson	1	Dinosaurs
May 16	Mrs. Abboud	K	Dinosaurs
May 20	Mrs. Cope	1	Dinosaurs
May 22	Mrs. Brent	K/1	Dinosaurs
May 30	Mrs. White	1/2	Animals
May 30	Mrs. Stewart	2	Animals
June 6	Mrs. Fetters	2	Dinosaurs
June 9	Mrs. Hughes	K	Animals
June 13	Mrs. Hughes	K	Dinosaurs

APPENDIX M

OUTREACH

LETTERS/QUESTIONNAIRE
TO TEACHERS

Nova: Cedargrove Childrens Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

TO: K-2

April 18, 1986

FROM: D. J. Hughes

SUBJECT: NOVA Outreach

As you know, NOVA has a new dimension since January 1986. Our museum now has trained docents who assist with the operation of the classroom visitations. We meet monthly for in-depth training sessions--not only for the purpose of learning how to best facilitate the children's use of the exhibits and to study the areas of the elementary science curriculum, but to have input with ideas in its operation. One such idea suggested by the docents was to develop an Outreach Program. They would prepare and present a science concept lesson for you in your classroom with your students. This would be done after first consulting with you to make it age/grade appropriate and meet your needs.

At our April 8th meeting, a report and assessment was given by the docents and Mrs. Garcia on our first endeavor. All were enthusastic and we now present the Outreach Program to you. This program concept is also one of the strategies listed as an approach in our SIP plan.

The docents are prepared to present classroom programs in two ways: they will either offer one to you in their particular area of expertise or develop one to be consistent with your current area of study.

The Outreach Program will now enable NOVA to reach and serve the third grade students and teachers. So, please let us know how we may assist you with your science program.

Nova: Cedargrove Childrens Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

16 June 1986

To: K-5 Teachers
From: Donna Hughes/NOVA Docents
Ref: NOVA Outreach

NOVA Outreach was initiated this year in response to teacher requests for in-depth science presentations to supplement their classroom curriculum. The NOVA docents met with the participating teachers and developed grade level appropriate programs on dinosaurs and the animal kingdom. This year we took the dinosaur unit to 7 classrooms and the animal unit to 4 classrooms. The average presentation takes 1½ hours. It consists of a 15-20 minute discussion on the subject and then an hour or so of related activities to reinforce the lesson presented with "hands-on" activities intended to spark interest and language/vocabulary development.

Next school year we would like to expand the Outreach Program to cover other science topics and grade levels.

If you can take the time to let us know what subject areas you would like developed, we will custom design a program for you and your classroom. We would like to use the summer months to prepare materials/units.

Attached is a list of some areas we could develop if they interest you, or, you could indicate areas you would like us to develop with you.

Please return this sheet to Donna Hughes/NOVA

Grade Level _____ Teacher _____

I am interested in:

Dinosaurs	___
Animal Kingdom	___
Indians	___
The Sea	___
Plant Kingdom	___
The Senses	___
TV Production	___
Space/Solar System	___
Fossils/Time Line	___
Energy Sources	___
Flight	___
Health/Medicine	___
Electricity	___
Magnetism	___
Weather	___
Geology--Rocks, Mountains, Volcanos	___
Geography--Map Making	___

_____

_____

_____

_____

_____

Thank you for your input.

APPENDIX N

INSERVICE EVALUATION

Individual Inservice Evaluations

Inservice Evaluation Number One

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

Inservice Evaluation Number Two

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

Inservice Evaluation Number Three

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

Inservice Evaluation Number Four

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

Inservice Evaluation Number Five

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

Inservice Evaluation Number six

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefullness					

Inservice Evaluation Number Seven

	Number of Responses				
	Poor	Fair	Average	Good	Excellent
Content					
Presentation					
Usefulness					

APPENDIX O

SAMPLE OF PRETEST REPORTING

Pretest Reporting 1

First Grade Class Pretest Results

Question	Number of Responses	Correct Responses
1. Can you give the name of this shell? --shell --rock --from outer space	3	0
2. How are ants like a community of people? --use feet --go to places --dig --make homes --have brains --they have two stomachs --they're little --they move --they crawl	9	0
3. What is a fossil? --type of rock --kind of like a drain --kind of like a shell --people who go to outer space	5	1
4. How many planets are there? --100 --50 --2,000 --2,000,000	4	0
5. Can you name one of the space explorations? --moon --Nova --Jupiter --sun --Mars	5	0
6. What does an engineer do? --writes --works on things when they're broke --shovel things --fixes horses hoofs	4	0

Pretest Reporting 2

Question	Number of Responses	Correct Responses
7. What are the main categories (areas) of a news broadcast? --weather --when rockets blast off --people that go into a rocket --they tell you what's happening	4	1 (partial)
8. What are some kinds of electricity that we use? --lights --wires --TV --elevators --radios --computer --plugs --telephones	8	0
9. Why do magnets stick? --they have a black thing --metal --it has electricity --sticky things --they burn it --cuz you put them on the refrigerator	6	0
10. What is a prism? --it's what you put bad guys in --(same answer) --(same answer)	3	0
11. What do you need to do to make a computer do what you want it to do? --put batteries in --(same answer) --push a button --turn wheel --has plugs --needs disk --(same answer)	7	0
12. What is an xray? --picture of your bones	1	1

		Pretest	Reporting 3
13.	What is a bullet proof vest made of? --metal --steel --(same answer)	3	0
14.	Can you name something that was used a "long time ago" that is probably not used today? --gold --car with a hood --bow and arrow --old fashioned clothes --spears --cannonballs --oldtimers	7	1
15.	How do you make a solar picture? --you sew it --you paint it	2	0

APPENDIX P

LETTERS, MEMORANDA, MISCELLANEOUS

Charter Oak UNIFIED SCHOOL DISTRICT

20240 Cortez Avenue • P.O. Box 9 • Covina, California 91723
Telephone: (818) 966-8331

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Assistant Superintendent
Educational Services

June 12, 1986

Dr. Mike Caston
Charter Oak Unified School District

Dear Dr. Caston:

I'm writing this letter to inform you about the many learning experiences afforded our children because of a devoted, dedicated and commendable teacher who works overtime and weekends to provide exemplary programs for students. Donna Mowell Hughes is one outstanding teacher who deserves accolades for many reasons. You are aware of the impact her museum NOVA has had on our students. She continually assesses her museum's goals to determine the appropriate science objectives, then she embarks upon a long journey to secure assistance to see that such objectives are met. She never stops. She always demands more for the children. She has made NOVA a true scientific adventure for students to discover the principles of their environment.

Next, she saw a need to find museum docents. She met regularly with volunteers and trained them to provide more services for students. She took another look and decided that an outreach program was a vital component so she assembled a talented and hard-working group. They specialize in going to classes and teaching students about teacher requested science units of study. She went with the docents to help organize and monitor learning stations for the outreach program. Donna doesn't stop. She forges ahead to identify a new need and develop a successful and exciting solution for students. She continues to offer an outstanding kindergarten experience in conjunction with NOVA. This is all volunteer time that Donna contributes to our school, for our children.

I'm so proud of her. Recently she made a video of her programs and NOVA University will be showing it at their summer workshop. She has been recognized for her accomplishments and she humbly accepts them. I feel honored to have Donna assigned to Cedargrove and grateful for her many services given to our students.

Sincerely,

Donna C. Patrick

Donna C. Patrick
Principal

DCP:jk
cc Donna Mowell-Hughes
Personnel file

A Commitment to Excellence

Charter Oak UNIFIED SCHOOL DISTRICT
20240 Cienega Avenue • P.O. Box 9 • Covina, California 91723
Telephone: (818) 966-8331

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Assistant Superintendent
Administrative Services
William W. Sousa, Ed.D.
Assistant Superintendent
Educational Services

October 1, 1986

Dear Jack Hughes:

On behalf of the Cedargrove students and teachers, I wish to extend to you our appreciation and gratitude for your hard work in rebuilding and reorganizing NOVA. In September we were surprised and shocked at NOVA's condition. It looked like Donna and the docents previous hard work had been destroyed. However, Donna gave me a tour of our new and renovated NOVA and it looks better than ever. It is because of you that this transformation occurred in such a short time. You generously put in an enormous amount of time and because of your commitment, we are now able to offer our students the best scientific education possible. Your special care in making our museum an inspirational setting will reap benefits for our students in future years.

Thank you for your dedication to NOVA's existence. We could not have accomplished such a large endeavor without your support.

Gratefully,

Donna Patrick

Donna Patrick
Principal

DP:jk

Nova: Cedargrove Childrens Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

To: Donna Hughes
Director, NOVA Cedargrove Children's Museum

From: Nancy Strinz
Docent, NOVA Cedargrove Children's Museum

Donna,

I wanted to let you know that apart from the obvious joy I get from the NOVA classes and the time I get to spend with the children that I see very real benefits from the program you have established and administer in NOVA.

The children love coming to the museum and what they are doing and learning there is having an impact on them beyond and between their visits.

I encounter children on the playground when I bring my children to school who chase after me asking, "Mrs. Strinz, is it our turn to come to the museum today?" or they rush over to let me know they duplicated an experiment at home and "it really works!".

Since I volunteer in areas other than NOVA I have an opportunity to work with the children in other settings and on projects which have no relationship to NOVA, but almost invariably NOVA is what they want to know about and where they want to go.

When I work in my son's classroom I'm asked by many of the children if they "get to go today?" The same thing occurs in my daughter's classroom. I get feedback from so many of them on the progress they have made with their magnets or bubbles or identifying the ocean fish at the fish market or the book they got at the library that's about that "space stuff" we talked about in one of the classes at NOVA. They drag their reluctant mothers down the aisle at Vons Market or Clark Drugs or the shoe store when they see me, to introduce them to one of the "museum teachers".

While I am not a certificated teacher it is very gratifying to be a part of the team teaching science and the scientific process to young children in such a way that it elicits such wonderful, joyous enthusiasm for learning.

Thank you for letting me come to the museum each Friday!!

/s/ Nancy

Staff Comments
Excerpts

* The docents are very knowledgeable people and very pleasant to work with.

* I highly rcommend NOVA's Outreach Program to all grade levels!

* From the teacher's point of view, the docents were very thorough and eager to meet my needs during our planning session. Everything was covered in-depth.

* The docents are genuinely interested in the children.

* The program was very well organized. The docents worked well with and were patient with the children. The additional volunteers stepped in with a minimum of direction. We all thank you for a marvelous and well-prepared program.

* NOVA was an excellent science experience for my students this past year. You presented concepts clearly and stimulated a great deal of interest and learning on the part of the children. Here's to many more happy creative years!

* I like the NOVA program very much. You kept things popping. This particular class is not able to handle an open atmosphere, so I appreciated the way you kept things moving, yet they stayed together.

* What a gift the docents are to NOVA and Cedargrove, too! The children and the parents loved the program. I did, too! Thanks for all of your hard work.

* I am a third grade teacher at Cedargrove School. While talking to my students about our science program for the year, they eagerly asked me when they would be going to the NOVA museum. They had experienced many rewarding science lessons during their first and second grades. They were excited and anxiously awaiting their next visit to the museum.

* You ventured into a difficult concept to teach to young minds because of its complexity. However, you were able to make it comprehendible by your highly stimulating and creative use of objects and bulletin boards. Your enthusiasm captures their attention and they enjoy the excitement of discovering new concepts about their galaxy. Your science program is a most successful vehicle for offering fascinating concepts while serving to spark an interest in delving into the realms of nature and the unknown.

* The children in my class look forward with great anticipation to NOVA. Only 1/2 get to go every other week so if its not their turn, they all moan! They love coming back with something in their hands to "show off!"

* The excitement of the children is very visible when it's their turn to go to NOVA. They share eagerly what was done and learned. Anticipation--two weeks hence--stays high for the next opportunity to participate.

* Children want to go to the NOVA museum so much that I finally told them if they asked one more time that they couldn't go.

NOVA Docent Comments
Excerpts

* I think having NOVA their very own museum, something that no other school has, makes the children more proud of Cedargrove, too. I really think NOVA is great! I think its benefits are tremendous. I hope it continues indefinitely.

* I know from my own children that they would choose a field trip to NOVA over a trip to most any other place the school would go. I know they would be having a great time, experiencing new things, learning, and all without ever leaving the campus!

* Well, here we are at the end of the year already. It has been exciting working with the children in such a unique way. NOVA offers the children so much and the benefits have been increased with the addition of the Outreach Program.

* The children are always so enthusiastic, and their excitement is contagious! It's really exciting to see the children so eager to learn and so receptive.

* Being a NOVA docent has been a lot of fun as well as educational. I learned something at every lesson. My sons are jealous, though, because I've gotten to go to more NOVA classes than they have.

* Together, I feel that we have accomplished a lot this year, and I hope that we can continue to do so next year! We have started new things. We've expanded the museum's ability to reach more children, not only because of our numbers (how did you ever manage on your own, Mrs. Hughes?), but by combining our ideas and our abilities. I think we all make a great team!

* We won't let NOVA end. I love it. I enjoy working with the children, the parents, and with you, Mrs. Hughes.

* Thank you for allowing me to be a part of your dream. It's done more for me than the children! NOVA has been one of the best things in my year. The kids are just great.

* Thanks for letting me come and play at the museum each week!!

* We need the parents to be as excited and as enthusiastic as their children are. If they could see the way NOVA reaches the children, then they would be hooked, too.

* This has been a good experience for me personally. I've had the opportunity to exert a direct influence on the learning experiences of my children, and I've been able to have fun in the process.

* Through the docent program, I've had the opportunity to associate with intelligent, thoughtful people who are committed to children and the educational process.

* Our success with the outreach program has been especially gratifying to me and has provided a real boost to my self-esteem.

* I'm looking forward to next year and the chance to continue the programs that we've begun and to expand into new areas. Working with you is so easy and such a lot of fun.

* Planning and execution were made easier by the great cooperation we received from teachers. They were receptive to our ideas, eager to help us and had several constructive suggestions to make which resulted in improvements over the prototypes for some of the projects.

* What is there to say about today? We were great! The children were great! Our program is great!

* There is a very special place--
Right here at Cedargrove--
Where children learn of outer space--
And see new worlds unfold--

In this room once dim and gray--
Now a star shines bright above--
To Mrs. Hughes I want to say--
That NOVA is spelled LOVE!

Sue

Nova: Cedargrove Childrens Museum
Cedargrove School
Charter Oak Unified School District
Covina, California 91723

To NOVA's Docents,

You are incredible. You are appreciated. You are loved. You have made all the difference to me, the children and to the success of NOVA... and it's future.

One of the things that I shared with the viewers of the tape yesterday that I wanted to share with you today is that my personal goal for Nova has been achieved. NOVA now belongs to Cedargrove and the children as it should. I can stand back and watch it continue in your capable and loving hands. It is with great pride that I place NOVA children, also, in your loving hands.

You care--you really do--and you've made me happy.

Thank-yous often come to me from the children. It's not always easy to get them to each of you so here are a few excerpts...they are precious:

-The show was grat! I liked making the rackoon hats.
-Dear Nova Docents... I injude it. (enjoyed)
-I liked the footprints because they show you what animaels feet look like.
-I like anamls.
-I liked footprints. Thay war preaty. I liked kangaros because the jowies war with.
-My favorid progect was the raccon hat. I like it because it is a sunvizer.
-I was absent on friday but I herd about it. It is very neat. I liked the kangaroo Joes must of been cute.
-I am sory that I miss all that fun but learn aboat them today.
-I liked the Raccons and Kangaroos because you made like they look real. Thank you for coming.
-I liked how you put on the show.
-I liked...because the racoon hats were particol (practical).
-THAK YOU VARYMUCH!!!
-I wish isall (I saw all) the joeys. (joys)
-I loved the program very much.
-Like the snake and the Lizrd Bee cous (because) they wher slimy.
-I liked making the racoon hat and the kangaroos because my grandma lives on a hill and racoons come so she put out food.
-Thanks for teaching us about the animals. I peresheated it thaks alot I liked the rachon hat and the kangaro becase it was isy.
-I really enjoyed working with you ladies.
-I lernd how Racoons get food and I lernd whant animals feet look like.
-I like all of you because you help us.
-I engoyd all of wht you did.
-We learend about the poutch.
-I learned a real lot.
-The kangaroo was very special becuase I learend a lot that they marsupil.

-One thing that I lurn is that ra ccoon sleep in the day and they go out in the night.
-I liked loots of things in the clas.
-I learned that kangaroos have babyies.
-I engoyed friday. I lernd spiders arnt insects.
-I learned that racoons are nocturnal animals...kangaroos are marsupial animals.

To sum it up, I would like to close with this excerpt:

You girls did a good job. I wish you can come again so we can have some more fun together.

I thank you too!

Donna Hughes, Director
NOVA Cedargrove Children's Museum

NOVA: Cedargrove Children's Museum

PLAY TODAY?

You say you love your children,
And are concerned they learn today?
So are we--that's why we're providing
A variety of kinds of "learning" play

Do you wonder what is the value
of blocks and other such play?
Your children are solving problems,
They will use that skill everyday.

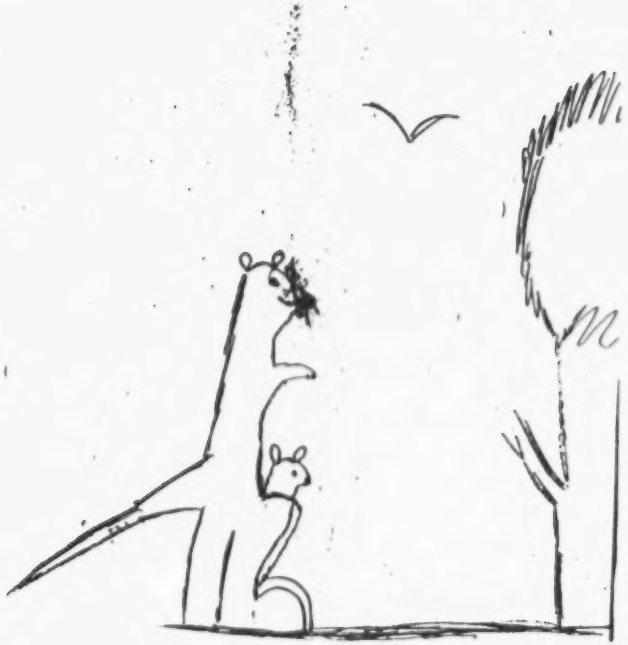
Do you wonder what is the value
of having your children play?
Your daughter's creating a tower;
She may be a builder someday.

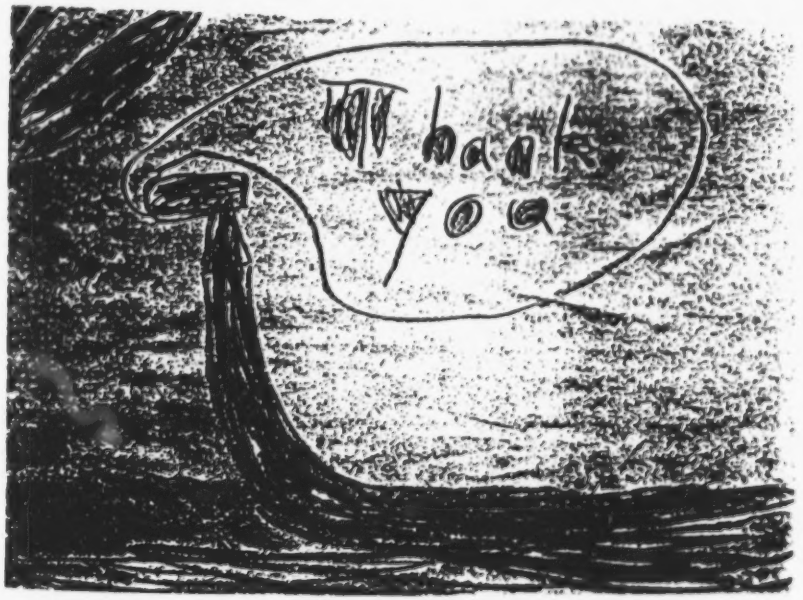
Do you wonder what is the value
of having your children play?
Your son's learning to cuddle a doll;
He may be a father someday.

Do you question NOVA's exhibit centers?
Do they look just like play?
Your children are making choices;
They'll be on their own someday.

Please don't worry that your children
aren't learning;
And that later they'll have to pay.
They're learning a pattern for learning;
For we want them to be learners alway(s).

Donna




I hear
you

Me